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TRINITY PLAZA

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Publication Date: November 7, 1986
Public Hearing Date: December 11, 1986
Public Comment Period: November 7, 1986 - December 22, 1986

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TRINITY PLAZA

DRAFT ENVIRONMENTAL IMPACT REPORT
83.196E

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450 McAllister Street, Sixth Floor, San Francisco, CA 94102

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Trinity Plaza : draft
environmental impact
1986.

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DEPARTMENT OF CITY PLANNING 450 McALLISTER STREET · SAN FRANCISCO CALIFORNIA 94102

November 7, 1986

TO: Distribution List for the Trinity Plaza EIR

FROM: Barbara Sahm, Environmental Review Officer

SUBJECT: Request for the Final Environmental Impact Report for Trinity Plaza

This is the draft of the Environmental Impact Report (EIR) for Trinity Plaza. A public hearing will be held on the adequacy and accuracy of this document on December 11, 1986. After the public hearing, our office will prepare and publish a document titled "Summary of Comments and Responses," which will contain a summary of all relevant comments on this Draft EIR and our responses to those comments. It may also specify changes to this Draft EIR. Those who testify at the hearing on the Draft will automatically receive a copy of the Comments and Responses document along with notice of the date reserved for certification (usually about 9 weeks after the hearing on the draft); others may receive such copies and notice on request or by visiting our office. This Draft EIR, together with the Summary of Comments and Responses document, will be considered by the City Planning Commission in an advertised public meeting and certified as a Final EIR if deemed adequate.

After certification, we will modify the Draft EIR as specified by the Comments and Responses document and print both documents in a single publication called the Final Environmental Impact Report. The Final EIR will add no new information to the combination of the two documents except to reproduce the certification resolution. It will simply provide the information in one rather than two documents. Therefore, if you receive a copy of the Comments and Responses document in addition to this copy of the Draft EIR, you will technically have a copy of the Final EIR.

We are aware that many people who receive the Draft EIR and Summary of Comments and Responses have no interest in receiving virtually the same information after the EIR has been certified. To avoid expending money and paper needlessly, we would like to send copies of the Final EIR to private individuals only if they request them.

If you want a copy of the Final EIR, please so indicate in the space provided on the next page and mail the request to the Office of Environmental Review within two weeks after certification of the Final EIR. Any private party not requesting a Final EIR by that time will not be mailed a copy. Public agencies on the distribution list will automatically receive a copy of the Final EIR. Copies will also be avilable at the Department of City Planning, 450 McAllister Street - 6th floor, San Francisco, California 94102.

Thank you for your interest in this project.

REQUEST FOR FINAL ENVIRONMENTAL IMPACT REPORT

To: Department of City Planning, Office of Environmental Review

Re: Trinity Plaza Final EIR (83.196E)

(____) Please send me a copy of the Trinity Plaza Final EIR.

Signed: _____

Print Your Name and Address Below:

_____
(Name)

_____
(House Number and Street)

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(City, State and Zip Code)

If you are requesting an FEIR, please tear this page out, show your address above, fold the mailer so that your return address and the Department of City Planning's address is exposed, seal, add postage and mail.)

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450 McAllister Street - 6th Floor
San Francisco, California 94102

ATTN: Ms. Sally Maxwell

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FEIR reqst postcard

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I. SUMMARY

A. PROJECT DESCRIPTION

Trinity Properties, Inc. proposes to construct a mixed-use project containing a combination of apartments, office and retail space, and open space and parking on the corner extending from Market to Mission Streets at Eighth Street. The project architects are Backen Arrigoni & Ross, Inc.

The project site encompasses lots 39, 51, 52, and 53 of Assessor's Block 3702 in the block bounded by Market, Mission, Seventh and Eighth Streets. On the 176,162 square foot site currently is one 180,000 gross square foot (gsf) building containing 147,150 gsf of residential space, 22,400 gsf of either vacant or underutilized office space, 10,450 gsf of retail space, and 198,662 gsf of parking area. In the building there are 358 apartments and 330 parking spaces. To construct the project this building would be demolished.

The proposed project includes one ten story residential, office and retail building on Market Street, one 17-story residential tower surrounded by a circular plaza in the center of the project site, and two 28 story residential towers on Mission Street. There would be a 25 foot setback on Market Street at a height of 90 feet and no rear yard on Mission Street. The residential towers would contain a total of 1,999 dwelling units. Underneath the construction area there would be three levels of basement parking with 904 parking spaces for the exclusive use of project residents. The project site would also include 12 loading spaces.

The project would contain a total area of 2,245,670 gsf. The gross floor area applicable to the Floor Area Ratio (FAR) as established in the Downtown Plan Ordinance would be 1,450,735 gsf (1,999 units) of residential space, 49,600 gsf of office space, 122,500 gsf of retail and personal services space, 48,565 gsf of tenant storage space, and 56,805 gsf of parking area. The combined overall FAR for the project would be about 9.8:1 which is in excess of the 6:0:1 allowed in the C-3-G District in the Downtown Plan Ordinance.

Excluding residential uses, the project FAR would be about 1.6:1. The project would require Conditional Use authorization to include additional floor area for dwellings above the base FAR, for parking in excess of accessory parking requirements, for lack of a public toilet, for demolition of existing housing, for an exception to the bulk requirements of Section 272 of the City Planning Code, for an exception of the rear yard setback requirement in Section 134d of the City Planning Code, an exception to the upper tower volume reduction guidelines in Section 272 of the City Planning Code, for an exception to the private open space guidelines of Section 135 of the City Planning Code, for an exception to the wind requirements of Section 148 of the City Planning Code, and for an exception to Proposition K shadow guidelines in Section 295 of the City Planning Code (page 26).

Project construction would proceed in two phases. During Phase One, part of the existing building would be demolished including 72 residential units, 283 parking spaces and 450 gsf of retail space. During this phase, estimated to be 30 months, the residential towers on Mission Street would be constructed. Construction would continue for another 30 months during Phase Two when the residential, commercial and office building facing Market Street would be completed (page 26).

B. ENVIRONMENTAL EFFECTS

LAND USE AND ZONING

The project would increase the intensity and variety of uses on the project site and would continue the trend of high-rise development in the South of Market area. The site is in the C-3-G (Downtown General Commercial) zoning district. The maximum FAR in the C-3-G District is 6.0:1. The project FAR would be about 9.8:1 including residential uses and about 1.6:1 excluding residential uses. The project would require Conditional Use authorization to include additional floor area for dwellings. The site is in three Height and Bulk districts: the section of the project site fronting on Market Street and extending 25 feet deep on Eighth Street is in the 120-X District; from 25 feet to Stevenson Street along Eighth Street the project is in the 150-S District; and from Stevenson Street to Mission Street the project site is in the 240-S District. The project would comply with all height and bulk dimensions required but would require exception from requirements pertaining to volume reduction in the upper tower portion of two of the residential towers and to maximum average floor area in the upper tower of the central residential tower (page 74).

URBAN DESIGN AND VISUAL QUALITY

The proposed residential towers would be visible from medium viewpoints, as well as long-range viewpoints such as Twin Peaks and Potrero Hill. The project design would be similar to the architectural style of the Civic Center buildings adjacent to the United Nations Plaza on the north side of Market Street. The Market Street facade of the project would be similar in height and scale to other buildings along Market Street. The project towers would be taller in height than other recently constructed high-rises in the area and would be larger in scale than existing low- and mid-rise buildings in the same block and in the South of Market area (page 76).

SHADOW & WIND

1. Shadows

Project shadows would most affect the pedestrian environment along Market Street in the morning period throughout the year. Many of the project's shadows would fall on areas shadowed by existing development or buildings under construction, and would also increase shadowed areas. Between the times of 10:00 a.m. and 3 p.m. from March 21 through September 21, the project would not cast shadows on any public open space under the jurisdiction of, or open space proposed for acquisition by, the Recreation and Park Commission. However, the project would cast new shadows on up to 11% of the area of Civic Center Plaza during the early morning from late August through mid April. Therefore, the provisions of Proposition K, the Park Shadowing Initiative Ordinance, would not be satisfied. During winter mornings, the project would cast new shadow on 3-8% of the area of United Nations Plaza (page 88).

2. Wind

Existing winds near the project site exceeded the 11 mph comfort criterion of the Downtown Plan Ordinance at four of 21 measurement locations. The project would generally decrease winds at ground level along Mission Street and near the Market/Eighth Street intersection, while increasing winds along Eighth Street and within U.N. Plaza (page 106).

TRANSPORTATION, CIRCULATION AND PARKING

The proposed project would generate a net increase of about 24,800 net new daily person trips to and from the project site. A total of 1,085 outbound trips would occur during the peak hour and 1,849 trips during the peak two-hour period (page 111).

The project would provide 904 off-street parking spaces for the exclusive use of project residents. Off-street parking is not required by the City Planning Code for commercial uses in the C-3-G District where the project is located. The number of spaces required for the residential units to be built as part of the proposed project is 500. The City Planning Code allows accessory off-street parking up to 150% of the number of spaces required (250 additional spaces). The project would exceed the 750 total allowable off-street parking spaces by 154 spaces and would thus require Conditional Use authorization.

The project would create a total parking demand of 1,338 spaces, and have an excess demand of 434 spaces. This level of excess demand would result in 100% occupancy of parking spaces in the project vicinity, and a need for 148 additional spaces within a two-block radius of the project site.

Pedestrian level of service at the Market and Eighth intersection would change from unimpeded to impeded as a result of project-related increase in pedestrian volumes.

The project would add about 195 outbound trips to Muni, 65 to BART, and 33 to other transit agencies during the p.m. peak-hour.

Section 152.5 of the Downtown Plan Ordinance would require 11 loading spaces for the project; the project would provide 12 spaces (page 120).

AIR QUALITY

Project related vehicular traffic would add to cumulative regional pollutant emissions. Emissions of total suspended particulates (TSP) generated by the project and cumulative development would increase TSP concentrations, which could increase the frequency of TSP standard violations in San Francisco, with concomitant health effects and reduced visibility.

Currently, the eight-hour CO standard is estimated to be violated at all three intersections analyzed, at Sixth and Brannan, Fifth and Bryant, and Eighth and Bryant

Streets. However, local CO concentrations are predicted to be less in 2000 than in 1984, and would not violate the standards at these three intersections, because the effects of emission controls on new vehicles would offset increases in traffic volumes and congestion (page 144).

ENERGY

Fabrication and transportation of building materials, worker transportation, and building construction would require about 300 billion Btu of gasoline, diesel fuel, natural gas, and electricity. Distributed over the estimated 50-year life of the project, this would be about six billion Btu per year, or about 1.5% of annual building energy requirements. The total annual energy consumption of the project is 305 billion Btu, the equivalent of 54,400 barrels of oil. The project would be more energy-efficient than required by Title 24 of the California Administrative Code (page 147).

The Downtown Plan EIR predicts an increase of about 210 million kWh of annual electrical consumption between 1984 and 1990, and of about 330-350 million kWh of total annual consumption for the years between 1984-2000. The PG&E projections and Downtown Plan EIR do not predict energy consumption at exactly the same time period and thus are not comparable.

CONSTRUCTION NOISE

The noisiest activity associated with the construction of the proposed project would be the use of pile drivers. Peak noise levels would be expected to reach about 105 dBA at a distance of 50 feet. During the beginning phase of construction there would be residents living on the project site. Pile driving noise levels in these apartments would be 90 dBA with windows open and 80 dBA with windows closed. During pile driving operations office workers of nearby areas would have difficulty conversing or using the telephone. Residents living on the project site would be similarly affected (page 155).

HISTORIC AND CULTURAL RESOURCES

The project would not affect known archaeological sites or historic/architecturally significant structures (page 159).

EMPLOYMENT AND HOUSING

Existing on-site uses are estimated to generate 25 jobs. The project would provide additional net new permanent employment for 677 persons, including 185 office workers, 370 retail workers, and 122 janitorial/service workers. Approximately 840 additional jobs would be indirectly created through the multiplier effect. The total number of direct and indirect employment generated would be 1,518. The project would create 453 construction jobs over a five year period. Approximately 793 jobs would be generated in the Bay Area as a result of the multiplier effect of project construction.

The project would provide about 1,999 residential units. These units would be offered on a rental basis and would be accessible to middle income individuals. There are currently 358 dwelling units on the project site. All of the residents of these units would be offered a unit in the residential towers to be constructed as part of the project at the same rental rate as currently stipulated in an effort to mitigate displacement effects.

925 units, 46.3% of the total units proposed as part of the project, would be subject to the affordability requirements of Planning Code Section 124(f) (page 162).

GROWTH INDUCEMENT

Increases in downtown office space from the proposed project would contribute to growth of local and regional markets for goods and services. Residential units to be constructed as part of the proposed project are sufficient to satisfy housing demand generated through employment growth and provide 1,641 additional units for individuals employed in the area (page 175).

C. MITIGATION MEASURES

Mitigation measures included in the project that would mitigate potentially significant environmental effects include the following:

- Construction truck traffic would be limited and regulated to avoid peak-hour traffic congestion, and construction activity would be coordinated with that of concurrent projects to minimize cumulative traffic effects.

- As recommended by the Environmental Protection Element of the San Francisco Master Plan, an analysis of noise reduction requirements would be prepared for the project sponsor.

- The general contractor would be required to reduce construction noise by as much as five dBA.
- The project sponsor would require that the general contractor adopt and implement measures to minimize noise and vibration from pile driving, and limit this activity to reduce disturbance to neighboring uses.

The following mitigation measures have not been included in the project but are under consideration for inclusion:

- Measures to improve access to the parking garages to minimize potential blockage on Eighth Street.
- Use of Jessie and Stevenson Streets as pedestrian access/linkages to the site to improve pedestrian circulation.
- An underground connection to BART to improve transit access to the project (page 180).

D. ALTERNATIVES TO THE PROPOSED PROJECT

ALTERNATIVE ONE: NO PROJECT

This alternative would involve no change to the project site as it now exists and no environmental impacts associated with the proposed project would occur (page 189).

ALTERNATIVE TWO: PROJECT CONFORMING TO THE PLANNING CODE (6:1 FAR)

An alternative designed to conform with the City Planning Code would be smaller than the proposed project. The alternative would contain a total constructed area of 1,420,042 gsf, 825,628 gsf (37% less than the proposed project), including 31,250 gsf of office space, 83,475 gsf of retail and personal services space, 922,049 gsf of residential space (1,482 units), and 79,162 gsf of open space. Parking would be reduced from 904 to 557 spaces. The overall FAR for the alternative would be 6.0:1, compared to the FAR of about 9.8:1 for the proposed project. This alternative would require Conditional Use authorization for demolition of the existing residential building, and an exception to the City Planning Code for exceedance of wind comfort criteria (page 190).

Visual quality, non-parking transportation, air quality, housing, energy, construction noise, and shadow impacts would be reduced in this alternative compared to the project, while wind impacts would be similar to the project. Area parking occupancy would increase with the decrease in on-site parking.

ALTERNATIVE THREE: PROJECT CONFORMING TO THE CITY PLANNING CODE (9:1 FAR)

An alternative designed to conform with the Planning Code would be smaller than the proposed project with reduced residential floor area, fewer parking spaces and reduced bulk in the upper tower portions of the office and residential towers. The alternative would contain a total constructed area of 1,704,410 gsf, compared to 2,245,670 gsf for the project. In this alternative, the number of apartments compared to the project would increase from 1,999 to 2,178, while the amount of residential space would be reduced from 1,450,735 gsf to 1,364,790 gsf. Parking would be reduced from 904 to 817 spaces compared to the project (page 193). All other uses would be the same as for the project. The overall FAR for the alternative would be 9.0:1, compared to the FAR of about 9.8:1 for the proposed project. This alternative would require Conditional Use authorization for demolition of the existing residential building, and exceptions to the City Planning Code for rear yard setbacks and exceedances of wind comfort criteria.

Visual quality, non-parking transportation, air quality, housing, energy, construction noise, and shadow impacts would be reduced in this alternative, while wind impacts would be simlar to the project. Area parking occupancy would increase with the decrease in onsite parking (page 190).

ALTERNATIVE FOUR: NO SHADOWS ON PUBLIC OPEN SPACE

This alternative would not cast new shadows on either U.N. or Civic Center Plazas, and would consist of a structure smaller than the proposed project. Total constructed floor area for this alternative would be 1,268,851 gsf, compared to 2,245,670 gsf for the project. In this alternative, the number of apartments compared to the project would decrease from 1,999 to 1,351, decreasing the amount of residential space from 1,450,735 to 799,775 gsf. There would be 38,137 gsf of office space included in this alternative. All other uses would be the same as the project. The FAR for this alternative would be 6.0:1, compared to about 9.8:1 for the project. This alternative would require Conditional Use

authorization for demolition of the existing residential building, and exceptions to the City Planning Code for rear yard setbacks and exceedance of wind comfort criteria (page 198).

Impacts on urban design, shadows and wind would be less than those described for the proposed project since the alternative would be less bulky and shorter in height than the proposed project.

Air quality impacts would decrease by 10%, in proportion to the decrease in vehicle miles traveled, as compared to the proposed project. Operational noise would decrease by 10%, in proportion to the decrease in vehicle traffic generated by the alternative, however the decrease would be imperceptible. Construction-generated noise impacts would be less than those described for the proposed project, due to a shorter construction period.

ALTERNATIVE FIVE: FAMILY HOUSING

This alternative would be essentially the same as the proposed project except that the residential towers would be changed from primarily studio units to a greater mix of housing -- reflecting recent housing and demographic trends in San Francisco. All other aspects of this alternative would be similar to the proposed project (page 201).

In this alternative the number of residential units would decline from 1,999 to 1,667 while the amount of residential space would be 1,450,735 gsf, the same as the project. Approximately 500 studio units (30% of total units) would be included in this alternative, accounting for 311,000 gsf. 500 one-bedroom units (30% of total) would account for 450,000 gsf, 500 two-bedroom units (30% of total) would account for 500,000 gsf, and 167 three-bedroom units (10% of total) would account for 189,735 gsf.

Impacts on urban design, shadows and wind wind be the same as described for the proposed project since the external design of the alternative would be identical to the proposed project.

Daily net new trips generated by the alternative would be 22,310, about 10% less than the number of net new trips projected for the proposed project. The number of peak-hour trips would decrease from 1,085 in the proposed project to 977 for this alternative, a decrease of about 10%. Transit trips would increase slightly due to the increased number

of children that could be expected as part of this alternative, but this increase would not have a measurable effect on the cumulative impacts on the transit carriers described as part of the analysis of the proposed project.

Air quality impacts would decrease by about 10%, in proportion to the decrease in vehicle miles traveled, as compared to the proposed project. Construction-generated noise impacts would be unchanged from those described for the proposed project.

ALTERNATIVE SIX: ALL RESIDENTIAL

This alternative would be essentially the same as the proposed project, except that all of the project office space and 100,000 gsf (75%) of the project retail space would be changed to residential use. This alternative would contain six loading docks, compared to 11 for the project. All other aspects of this alternative would be identical to the proposed project.

In this alternative the number of residential units would increase from 1,999 to 2,250, reflecting an increase in residential space from 1,450,735 gsf with the project to 1,600,335 gsf, a 10% increase in residential space compared to the project. Further, this alternative would contain 32,500 gsf of retail space, 100,000 gsf less than the project total of 132,500 gsf.

Land use impacts would differ compared to the project since there would be less office or retail space. There would be lower employment generation in this alternative compared to the project. Impacts on urban design/visual quality, construction noise, wind, and shadows would be the same as described for the proposed project since the external design of the alternative would be identical to the proposed project.

Transportation impacts from decreased travel demand on the site would be 34% less than the project. This decrease in travel would not change impacts on levels of service at the intersections analyzed for the proposed project since the project is only a portion of the cumulative travel demand which would impact the intersections. Transit trips would decrease proportionally with a decrease in overall transit demand, but this decrease would not have a measurable effect on the cumulative impacts on the transit carriers described as part of the analysis of the proposed project.

Air quality impacts would be about 34% less than for the proposed project, a decrease in proportion with the decrease in travel demand associated with the alternative.

II. PROJECT DESCRIPTION

A. OBJECTIVES OF PROJECT SPONSOR

The proposed project would be a mixed-use development comprised of apartments, office and retail space, open space and parking. The project sponsor, Trinity Properties, Inc., San Francisco, proposes to replace the existing Trinity Apartments with a greater number of apartments with onsite proximity to office and retail space. The sponsor's primary objective is to help to fulfill San Francisco's need for centrally located high-quality apartments which are affordable to middle-income persons. The sponsor intends to create a planned development where residents could walk to work (possibly within the project) and where a distinctive, contemporary community may be built. The sponsor also intends to receive a reasonable return on his investment. Architects for the project are Backen, Arrigoni & Ross, Inc. of San Francisco.

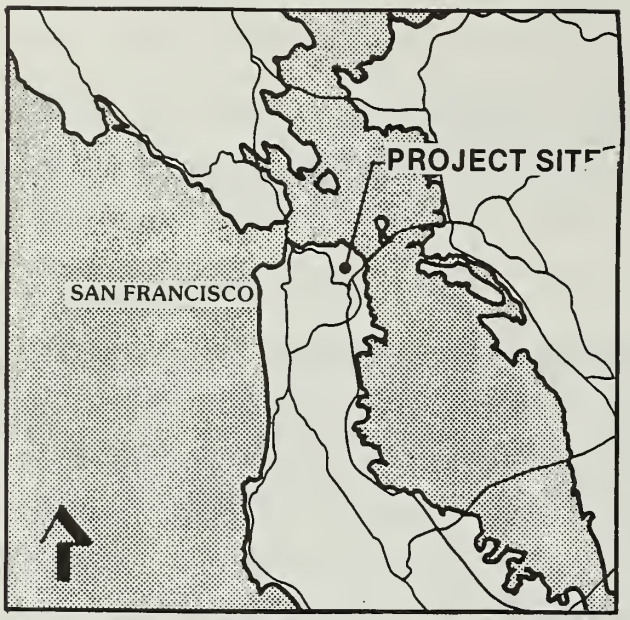
B. LOCATION

The project site is located at 1169 Market Street, on the southeast corner of Market and Eighth Streets in Assessor's Block 3702, lots 39, 51, 52, 53. The site extends from Market to Mission Street along Eighth Street . The project site is located in the Civic Center area, one to two blocks away from Civic Center buildings. United Nations Plaza is located across Market Street north of the project site. Figure 1, page 12, shows the local and regional location of the project site.

The 176,162 square foot site is in the C-3-G (Downtown General Commercial) District, which permits a maximum floor area ratio (FAR) of 6.0:1, excluding residential and ground-floor retail uses. The site is in three height and bulk districts. Fronting on Market Street, the designation is 120-X; from the 75-foot depth to Stevenson Street the designation is 150-S; and from Stevenson Street to Mission Street the designation is 240-S.

SITE LOCATION

FIGURE 1



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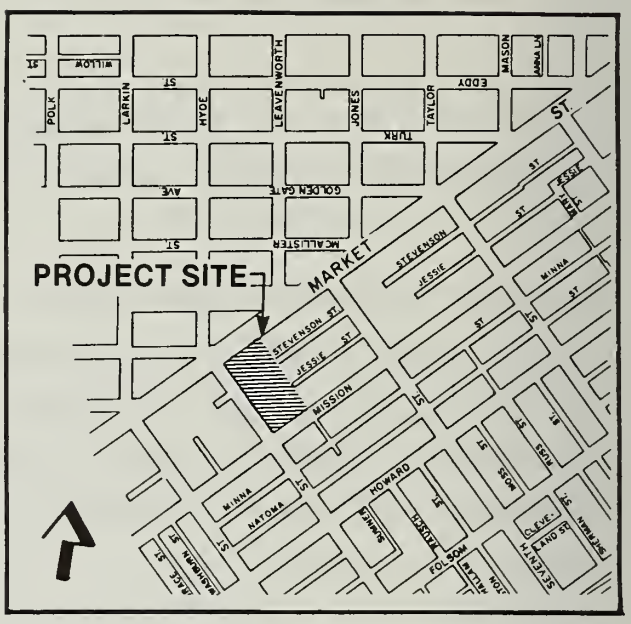
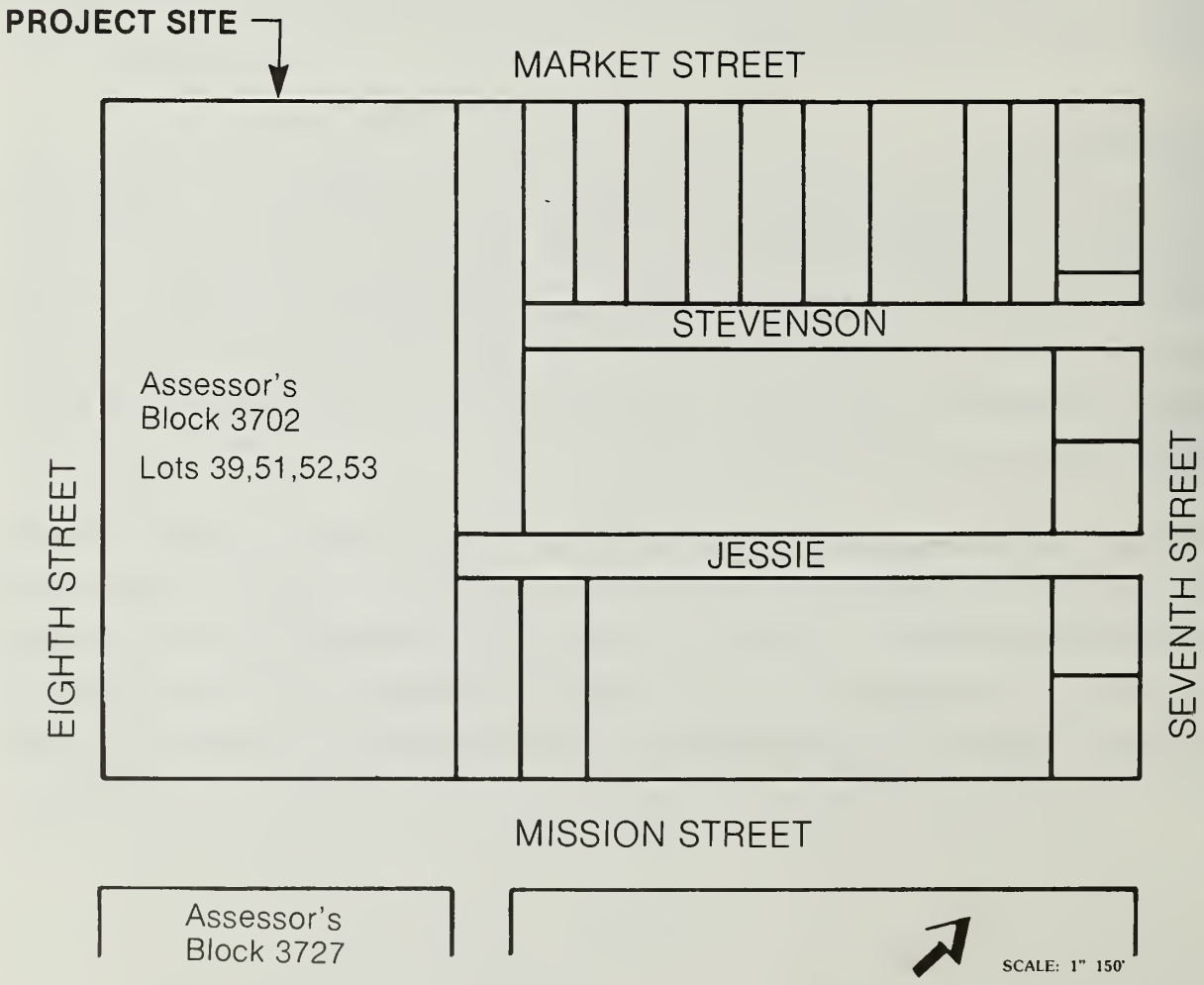


SCALE: 1" 1,200'



The site falls within the requirements of sunlight access to public sidewalks due to its location on Market between Tenth and Second Street. For buildings on the south side of Market the maximum street wall height is 119 feet, and the sun access angle is 50°.

C. PROJECT CHARACTERISTICS

Currently on the site is a 180,000 square foot apartment building that contains 358 apartment units, 22,400 gross square feet (gsf) of either vacant or underutilized office space, 10,450 gsf of retail space, and 330 parking spaces used by residents and workers in the area. The 22,400 gsf of either vacant or underutilized office space is assumed to be vacant for environmental review purposes, although a portion of this space is currently used for offices. For a conservative case, impacts resulting from existing offices uses are not contained within the baseline analysis, so that future impacts resulting from the analysis are shown to be greater than they would otherwise be. The building varies in height from three to seven stories. Seventy-three of the 330 parking spaces are on a basement level under the existing building. The existing building and parking lot would be demolished as part of the proposed project.

The project would be a mixed-use residential, commercial, retail, and office development and would be built in phases (Figure 2, page 14). In the first phase, two residential towers fronting on Mission Street would be constructed and in the second phase the third residential tower and the Market Street building would be constructed. Upon completion, the proposed project would consist of four buildings containing a total area of 2,245,670 gsf. For purposes of calculation of Floor Area Ratio (FAR) the project would have a total of 1,687,097 gsf of floor area, including 1,450,735 gsf (1,999 units) of residential space, 49,600 gsf of office space, 122,500 gsf of retail space, 10,697 gsf of parking area in excess of required and accessory parking, and 48,565 gsf of tenant storage. The project would result in a net increase of 1,303,585 gsf of residential space (1,641 units), 49,600 gsf of office space, 122,050 gsf of retail space, and 206,077 gsf (574 spaces) of parking space on the project site. Not including residential space, the proposed project would have a Floor Area Ratio (FAR) of about 1.6:1. Including residential space the proposed project would include a total of 1,728,205 gsf of floor area and would have an FAR of about 9.8:1. Tables 1 and 2, pages 15 and 16 show project characteristics and floor area calculations.

Two residential towers would front on Mission Street, and would contain 1,150 studio rental units (716,160 gsf; see Figure 3, page 17). A third tower would be located in the

SITE PLAN

FIGURE 2

SOURCE: BACKEN, ARRIGONI & ROSS, MAY, 1985

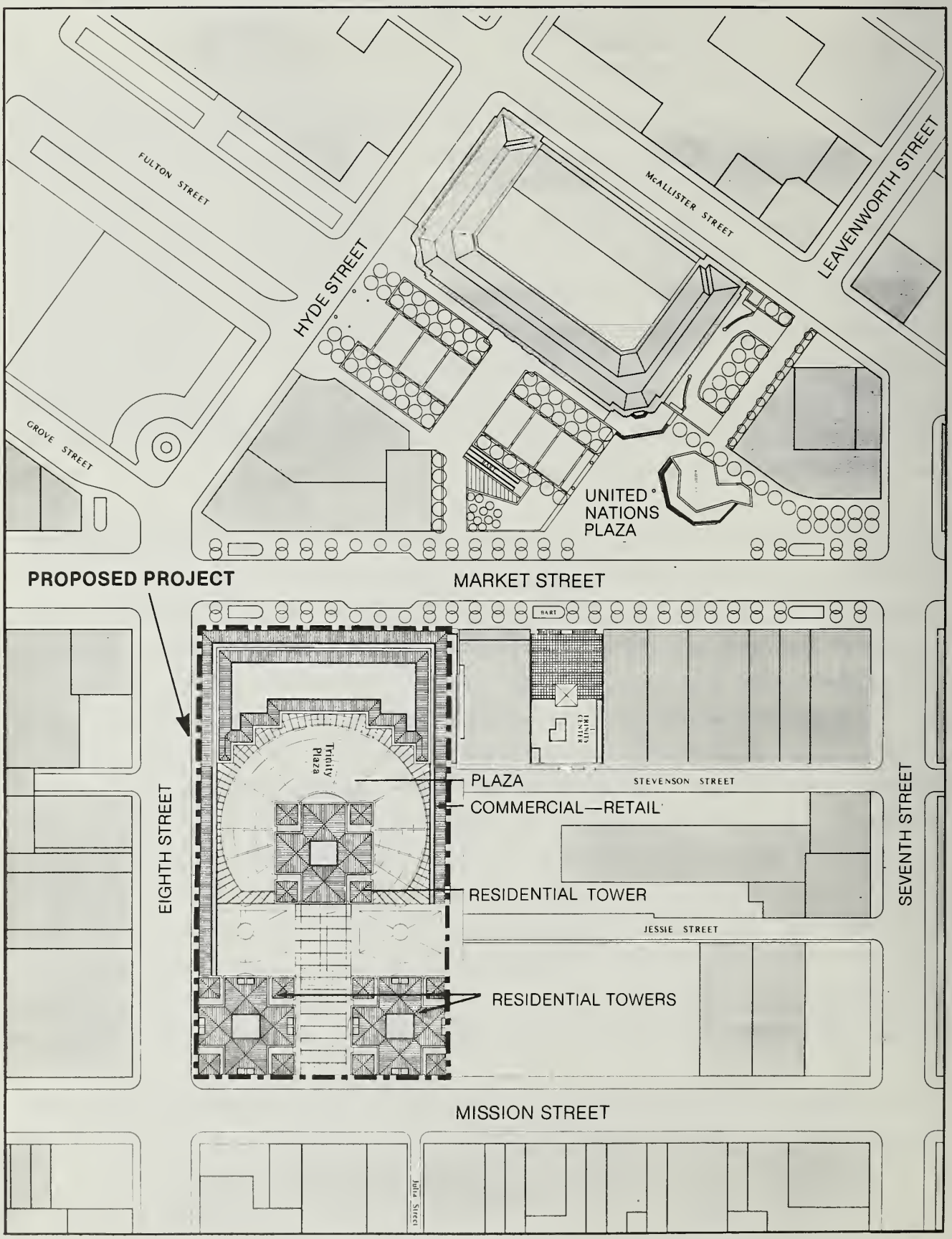


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TABLE 1

PROJECT CHARACTERISTICS

RESIDENTIAL TOWERS

Use	Gross Area (Square Feet)	
Retail and Personal Services	30,000	
Residential (Units)	1,052,395	*(1,570)
Parking (Spaces)	333,450	(904)
Open Space - Private	36,115	
Open Space - Common	57,750	
Circulation and Service	14,515	
Tenant Storage	48,565	
Mechanical	31,800	
Tenant Recreation	8,500	
Total	1,613,090	

Height and Bulk	Proposed	Permitted
Height	240.0	240.0
*Length - Lower Tower	124.5	160.0
*Length - Upper Tower	124.5	*130.0
Diagonal - Lower Tower	174.0	*190.0
Diagonal - Upper Tower	150.5	160.0

MARKET STREET BUILDING

Residential (Units)	398,340	* (429)
Retail and Personal Services	102,500	
Office	49,600	
Mechanical	10,600	
Parking	0	
Circulation and Service	43,540	
Open Space	28,000	
Total	632,580	

Height	90/150	90/150
Plan	N/A	None
Diagonal	N/A	None

TOTAL FOR PROJECT

Residential (Units)	1,450,735	*(1,999)
Tenant Storage	48,565	
Tenant Recreation	8,500	
Retail and Personal Services	132,500	
Office	49,600	
Mechanical	42,400	
Circulation and Service	58,055	
Parking	333,450	
Open Space	121,865	
TOTAL	2,245,670	

Project FAR with residential **9.81:1**
Project FAR without residential **1.58:1**

TABLE 2

BUILDING AREA CALCULATIONS

Project Site Area -- 176,162 sq.ft.

	Total Gross Floor Area	Area Applicable to Floor:Area Ratio (FAR)
Residential	1,450,735	1,450,735
Tenant Storage	48,565	48,565
Tenant Recreation	8,500	0
Mechanical	42,400	0
Office	49,600	49,600
Retail and Personal Services	132,500	122,500
Parking	333,450	56,805
Circulation and Service	58,055	0
Open Space	121,865	0
Total	2,245,670	1,728,205

Project FAR with residential about 9.8:1

Project FAR without residential about 1.6:1

MISSION STREET ELEVATION

FIGURE 3

SOURCE: BACKEN, ARRIGONI & ROSS, MAY, 1985

FEET 0 32 64 128

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various sizes (398,340 gsf; Figure 3. Each residential tower would be 28 stories and 240 feet in height. There would be a total of 1,189 studio, 500 one-bedroom, and 310 two-bedroom apartment units, comprising 60%, 25% and 15%, respectively, of the total of 1,999 units. The towers would also include 30,000 gsf of retail space.

The project would also include 49,600 gsf of office space and 102,500 gsf of retail space in a 10-story building on Market Street (Figure 4, 5, and 6, pages 19-21). The Market Street building would have a height of 90 feet on the Market Street frontage, would step back 25 feet at that height and then rise to 150 feet (10 stories). Figure 7, page 22, shows an isometric view of the entire project.

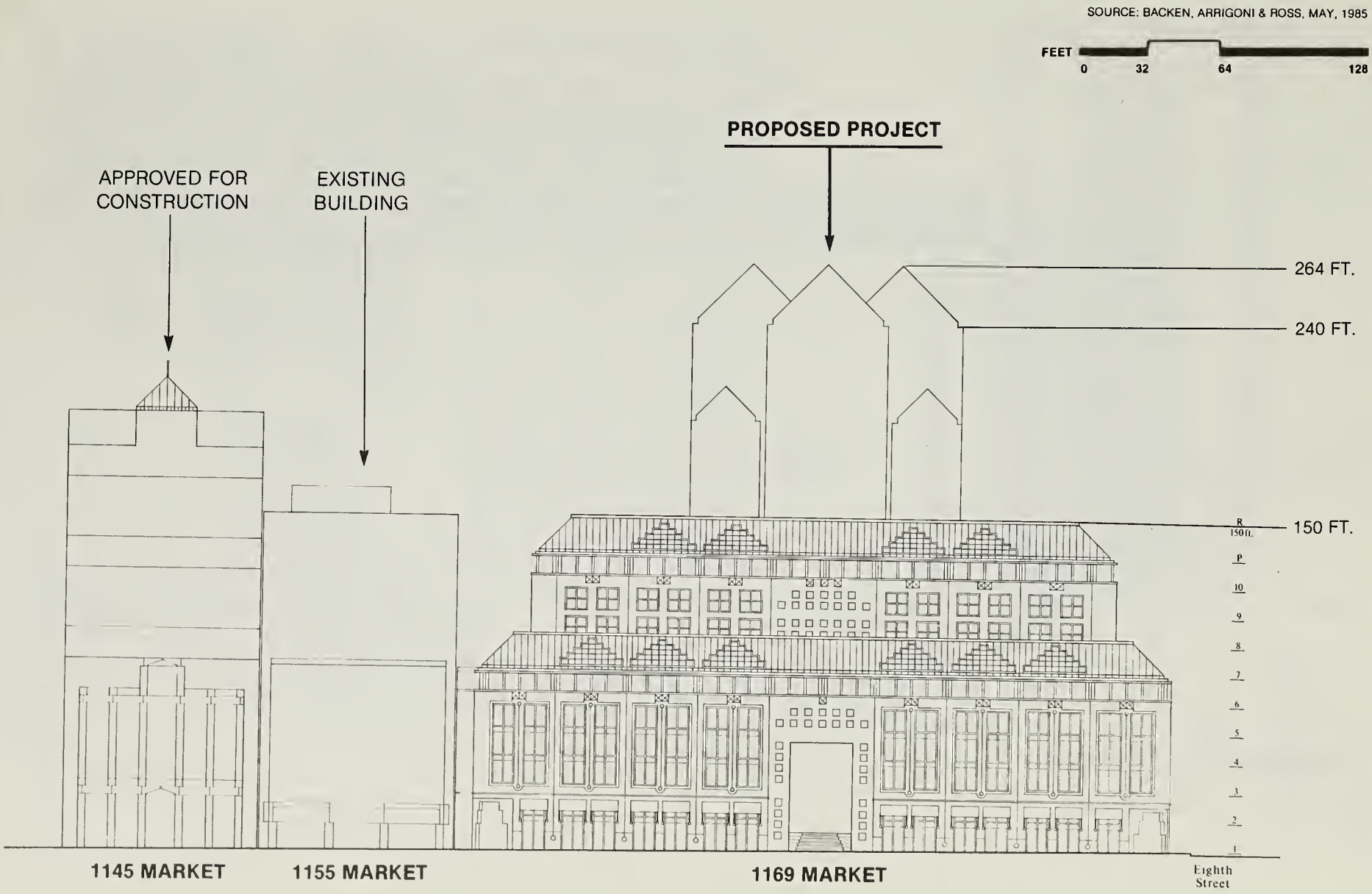
Retail and personal services space would be contained in the ground floors of all of the commercial and residential buildings in the project.

There would be basement-level parking for 904 cars and 12 off-street service-vehicle loading spaces. Parking would be used solely by project residents. See Figure 8, page 23, for parking level plan. Cars would enter and exit the parking areas on Eighth Street; cars would also exit onto Mission Street. Six loading docks for the commercial building would be accessed via either Stevenson or Jessie Street from Seventh Street (see Figure 7, page 22). Two loading docks for the commercial space would be accessed directly from Eighth Street. The two residential towers on Mission Street would contain four loading docks, which would be accessible either from Eighth Street or from the auto court (via Jessie Street).

The project would contain a variety of public open and recreational areas, including a large circular plaza surrounding the center residential tower. A central entrance and diagonal walkways would connect the street area to the open air plaza. Below the plaza there would be a shopping gallery with retail-commercial spaces and an ice rink. The project would contain a total of about 28,000 gsf of public open space at the ground-level plaza, about 57,750 gsf of common residential open space, and 36,115 gsf of private residential open space. Figures 9 and 10, pages 24 and 25, show the plaza and gallery level plans. Approximately 2,500 gsf of publicly accessible open space may be identified by the project sponsor as required open space used to meet a condition of approval of the 1145 Market Street project (81.549E), a project of the sponsor that received final City approvals on September 10, 1986.

MARKET STREET ELEVATION

FIGURE 4



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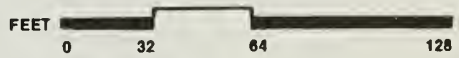
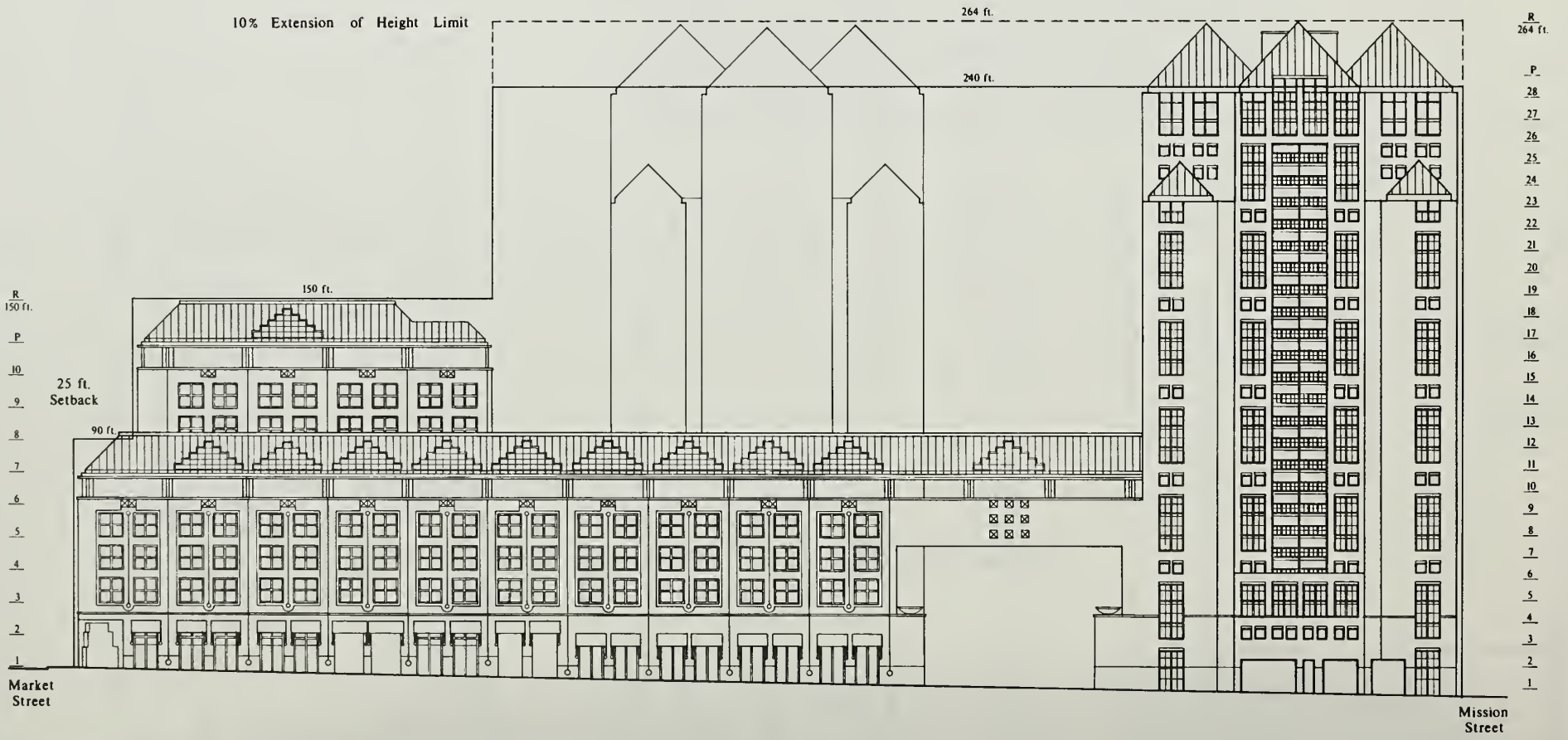
EIGHTH STREET ELEVATION

FIGURE 5

SOURCE: BACKEN, ARRIGONI & ROSS, MAY, 1985





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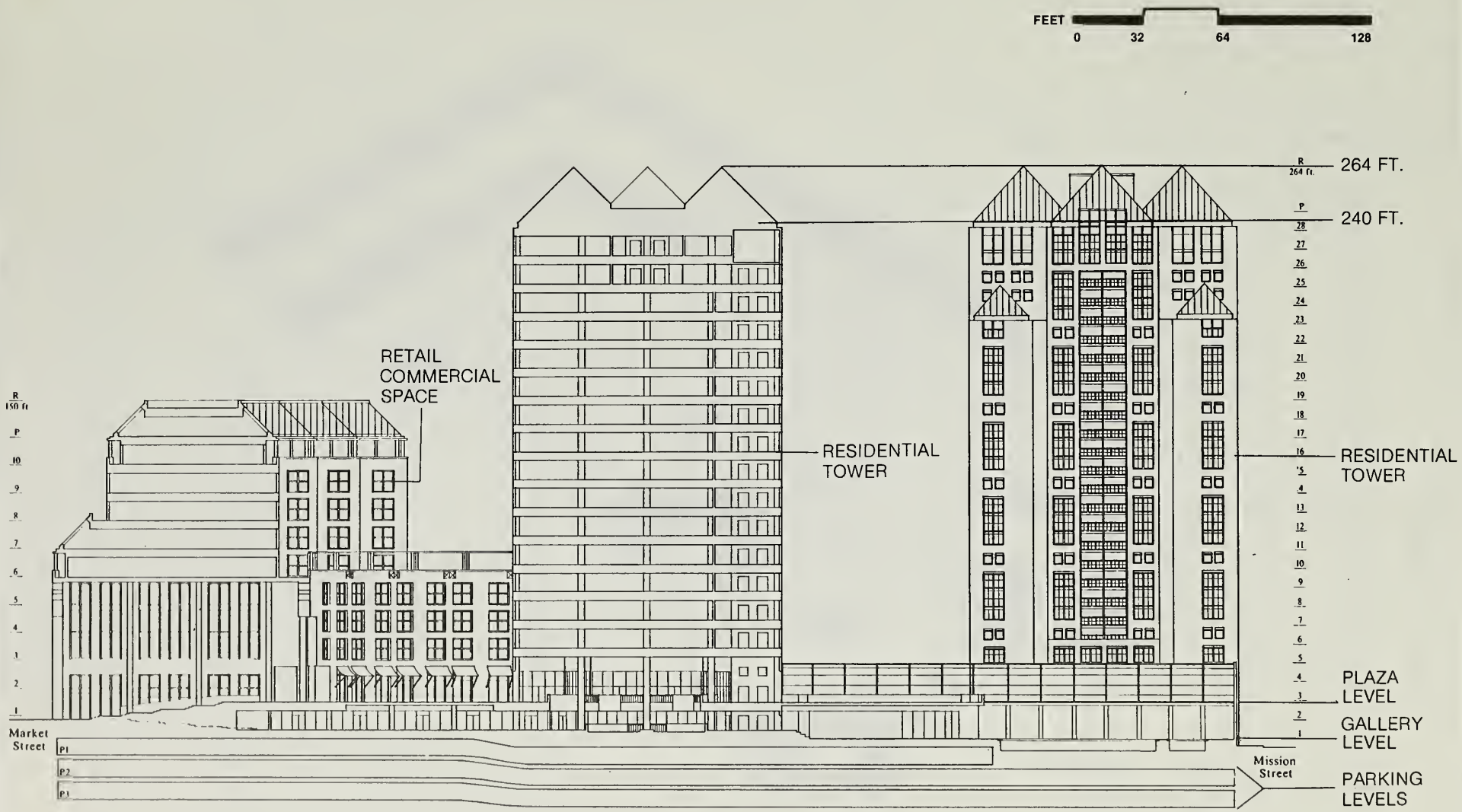
INTERIOR ELEVATION OF PROJECT FROM MARKET ST. TO MISSION ST.

FIGURE 6

SOURCE: BACKEN, ARRIGONI & ROSS, MAY, 1985



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ISOMETRIC DRAWING OF MODEL

FIGURE 7

SOURCE: BACKEN, ARRIGONI AND ROSS

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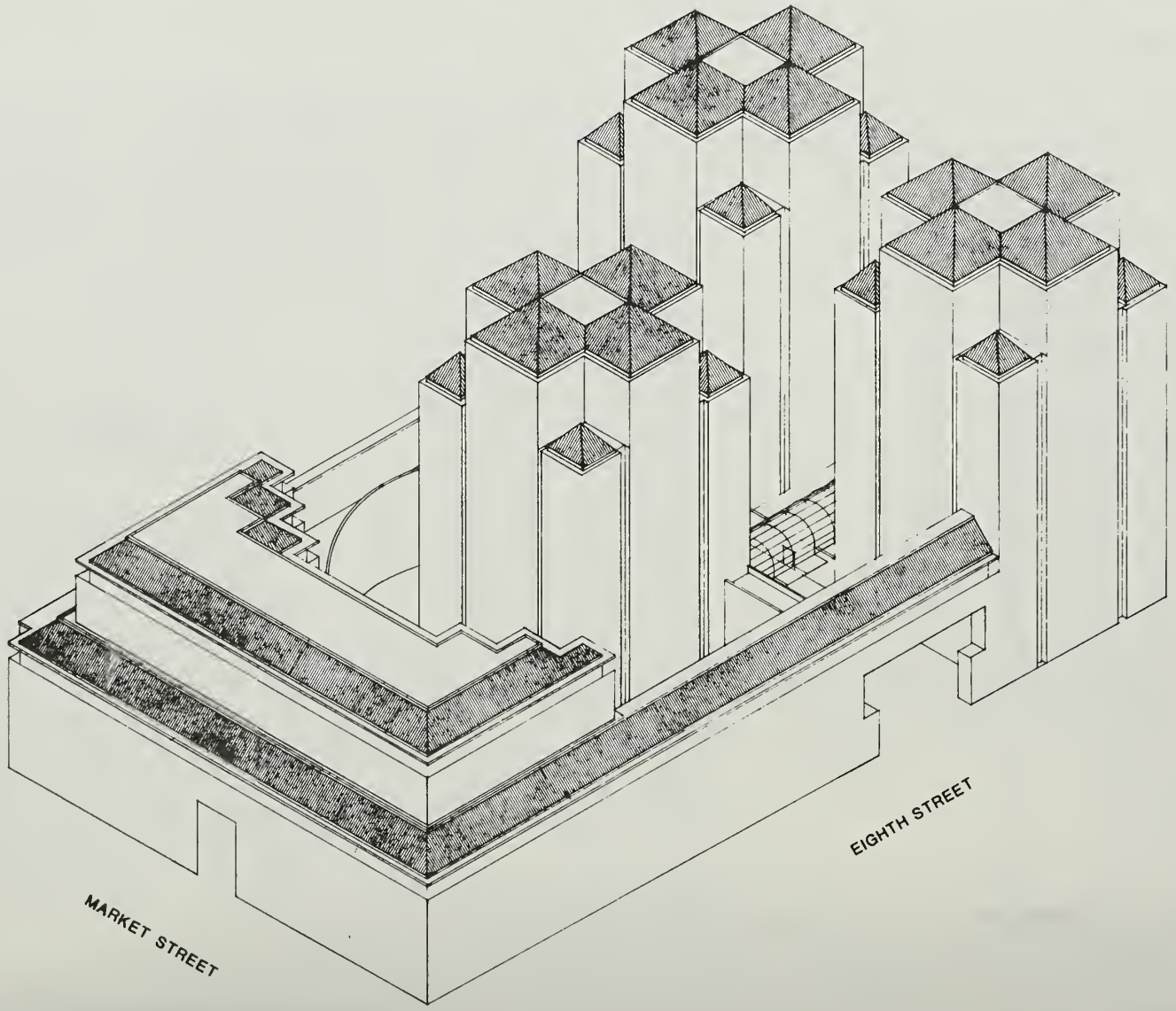

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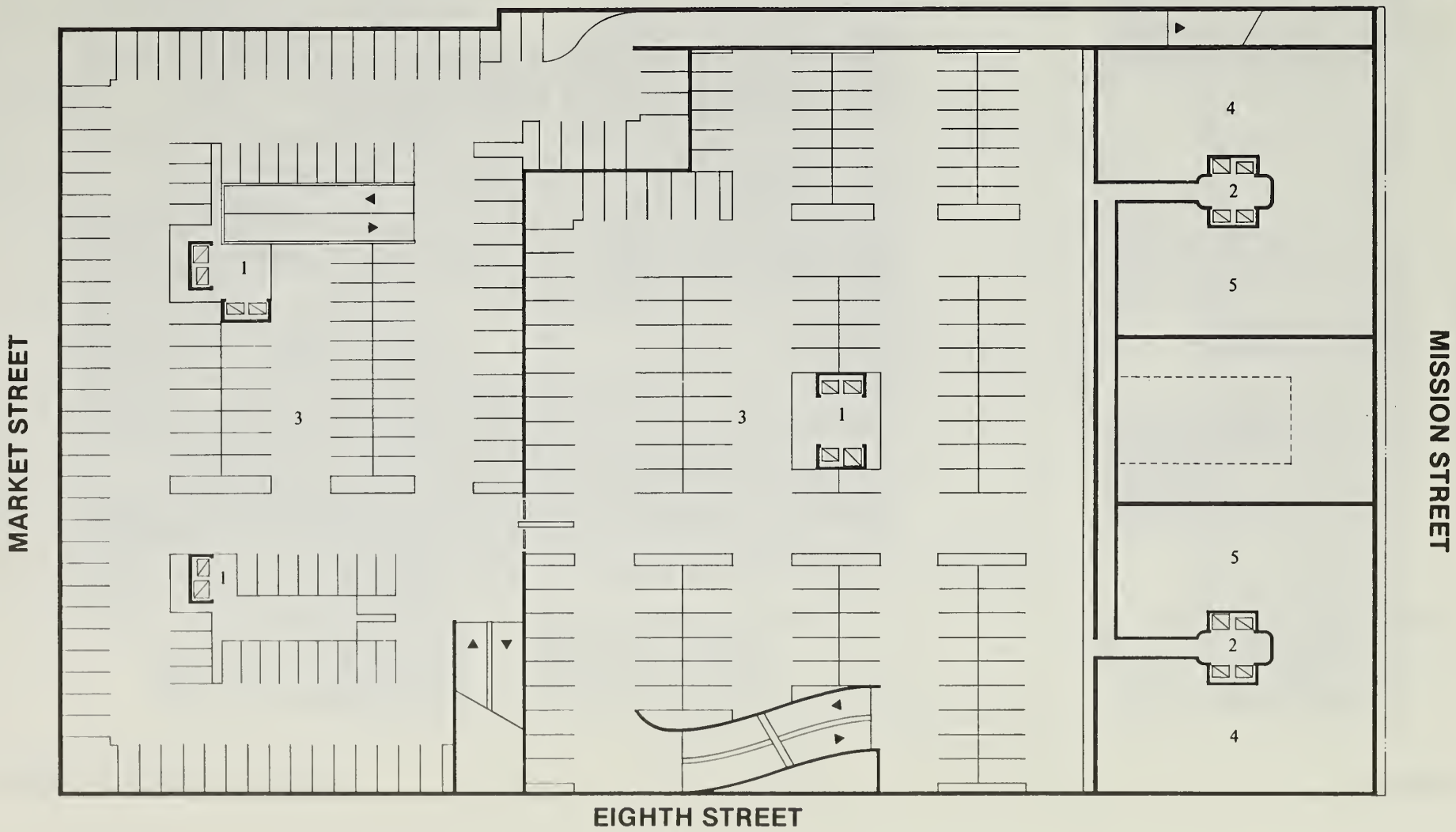
BASEMENT PARKING LEVEL

FIGURE 8

AUTO PARKING 3
OFFICE LOBBY 1
MECHANICAL 4
APARTMENT LOBBY 2
STORAGE 5

SOURCE: BACKEN, ARRIGONI AND ROSS, MAY 1985

FEET 0 40 80 160



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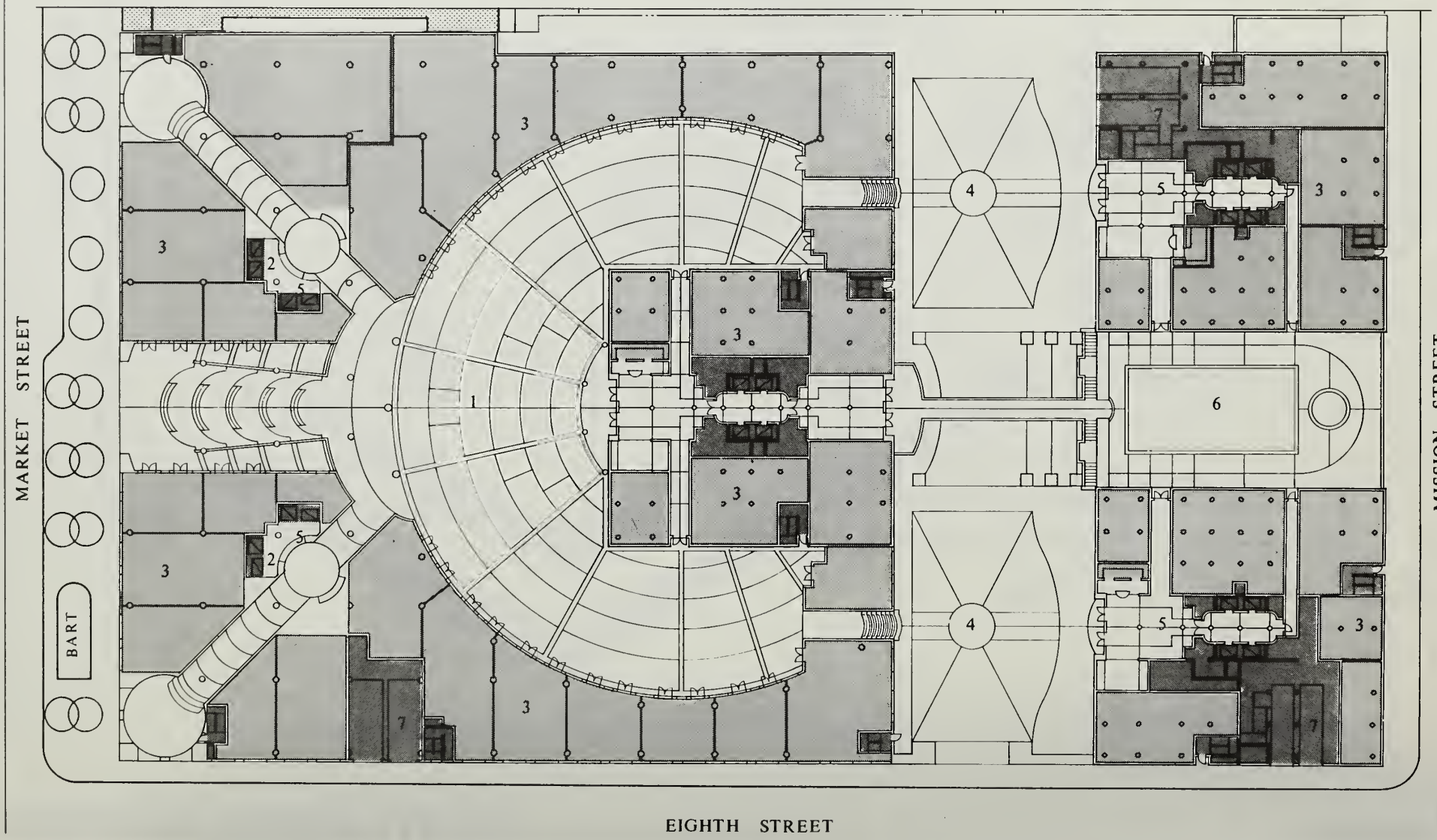
PLAZA LEVEL PLAN

FIGURE 9

1 Plaza
2 Office Lobby
3 Retail-Commercial
4 Auto Court
5 Apartment Lobby
6 Pool
7 Service Area

SOURCE BACKEN. ARRIGONI AND ROSS. MAY 1986

FEET 0 25 50 100



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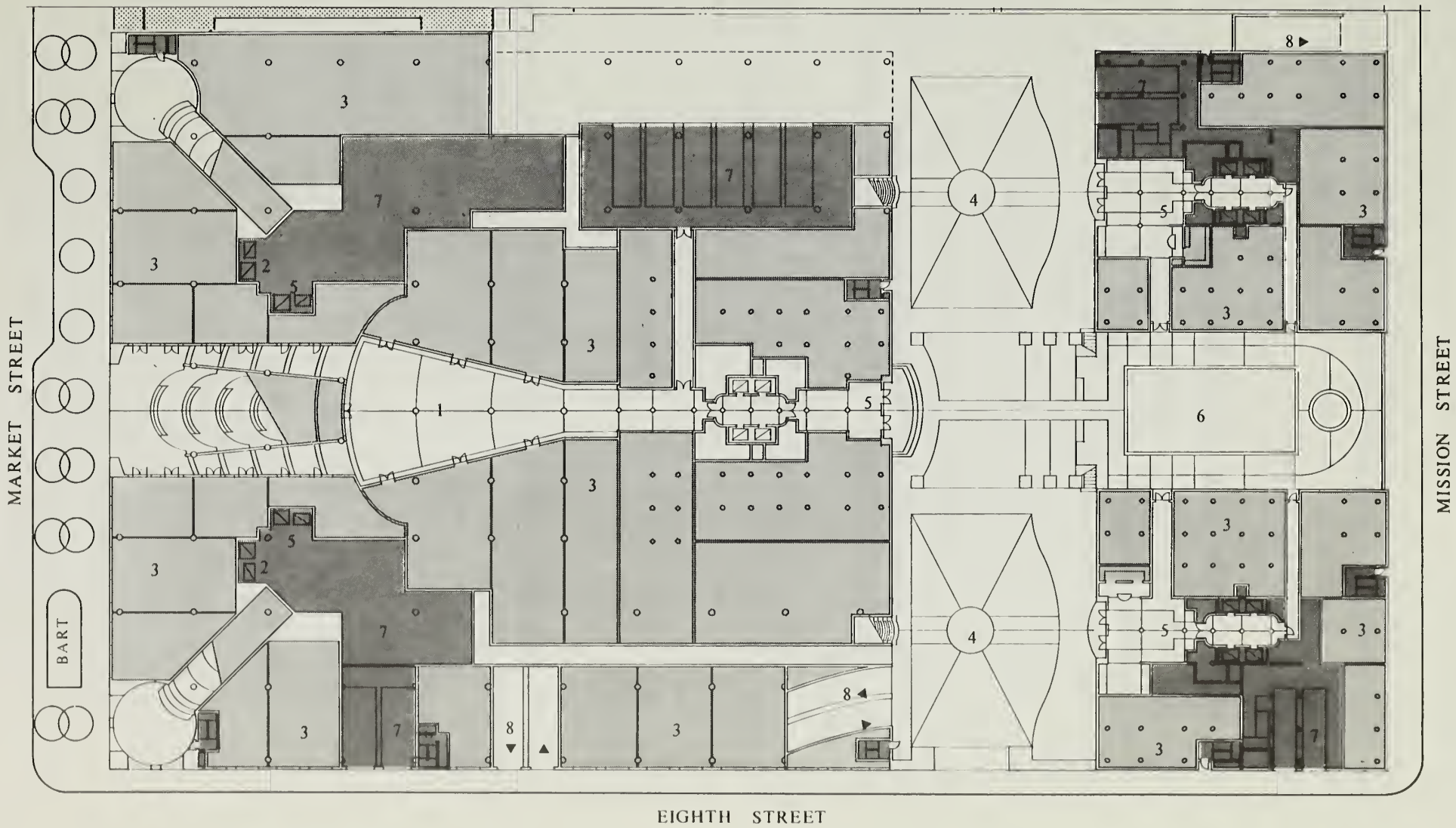
GALLERY LEVEL PLAN

FIGURE 10

1 Shopping Gallery
2 Office Lobby
3 Retail-Commercial
4 Auto Court
5 Apartment Lobby
6 Pool
7 Service Area
8 Auto Parking Ramp

SOURCE BACKEN ARRIGONI AND ROSS, MAY, 1986

FEET 0 25 50 100



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by the project sponsor as required open space used to meet a condition of approval of the 1145 Market Street project (81.549E), a project of the sponsor that received final City approvals on September 10, 1986.

D. PROJECT SCHEDULE AND REQUIRED APPROVALS

The project would proceed in two phases. The first phase would consist of the construction of the residential towers on Mission Street. Part of the existing building would be demolished, including 72 residential units, 10,450 gsf of retail space and 50 parking spaces. During this phase, 286 residential units, 10,000 gsf of retail space and 50 parking spaces would be preserved on the site. Construction of the second phase would require the demolition of the remainder of the existing building and would begin approximately three years after the start of construction of the first phase. During the second phase, two additional buildings would be constructed as well as 904 parking spaces. Construction time for each phase is estimated to be 30 months. The total cost for the project would be $150,000,000.00.

Following a public hearing on this EIR before the City Planning Commission, responses to all written and oral comments will be prepared. This EIR will be revised as appropriate and presented to the City Planning Commission for certification as to accuracy, objectivity and completeness. No permits may be issued before the Final EIR is certified.

The proposed project would be subject to the policy of the City Planning Commission to review downtown projects under the Commission's powers of Discretionary Review. As part of the approval process, the project sponsor would apply for Conditional Use authorization for the following:

- Parking area in excess of the accessory parking requirements of Section 204.5(c) of the City Planning Code;
- Residential floor area above the base FAR (this area would amount to approximately 671,233 gsf (925 units); and
- Demolition of an existing residential building.

Further, the project sponsor would also request exceptions to sections of the City Planning Code for each of the following items:

- rear yard reduction requirements pursuant to Section 134(d);
- upper tower extension requirements of Sections 263 and 270;
- wind requirements of Section 148;
- open space requirements of Section 138;
- sunlight access requirements of Section 147; and
- Proposition K shadow guidelines of Section 295.

If the project were to be approved by the City Planning Commission, the project sponsor would obtain demolition, building and related permits from the Central Permit Bureau of the Department of Public Works.

The project would be subject to Ordinance 253-86 requiring that soil testing be conducted in accordance with specified procedures.

III. ENVIRONMENTAL SETTING

A. LAND USE AND ZONING

1. Land Use

The project site consists of lots 39, 51, 52 and 53 of Assessor's Block 3702 in the block bounded by Market, Mission and Eighth Streets, and occupying about one-third of the block to where Stevenson and Jessie dead-end at the site (see Figure 1, page 12). The 176,162 gsf site contains a residential building of up to seven stories in height (highest portion is on Market Street, see Figure 18, page 83). Unlike most of the structures along Market Street, the existing building is set back from the street and occupies a portion of the site. Parking areas associated with the building surround it (Figure 11, page 29).

Other land uses on the project block include the Greyhound Bus Depot, occupying most of the area between Seventh, Stevenson and Mission Streets; 1155 Market Street, an 11-story office building recently completed; and a vacant lot, site of the approved 1145 Market Street project, a 13-story office building. Buildings east of the site on the same block include office uses with ground-floor retail and restaurants; the Embassy and Strand movie theaters; and the National Hotel, a residential hotel. Adjacent land uses are shown in Figure 12, page 30.

The project site is located in the mid-Market Street area near the the Civic Center and United Nations Plaza. Land uses in this area are characterized by retail uses in the lower floors with office and residential uses above. The prevalence of ground-floor retail uses results in a pedestrian-oriented landscape. Building heights in this area range from 2 to 25 stories.

VIEWS OF PROJECT SITE

FIGURE 11

SOURCE SQUARE ONE FILM & VIDEO

A. CORNER OF EIGHTH AND MARKET STREETS

B. LOOKING NORTH ON MISSION STREET

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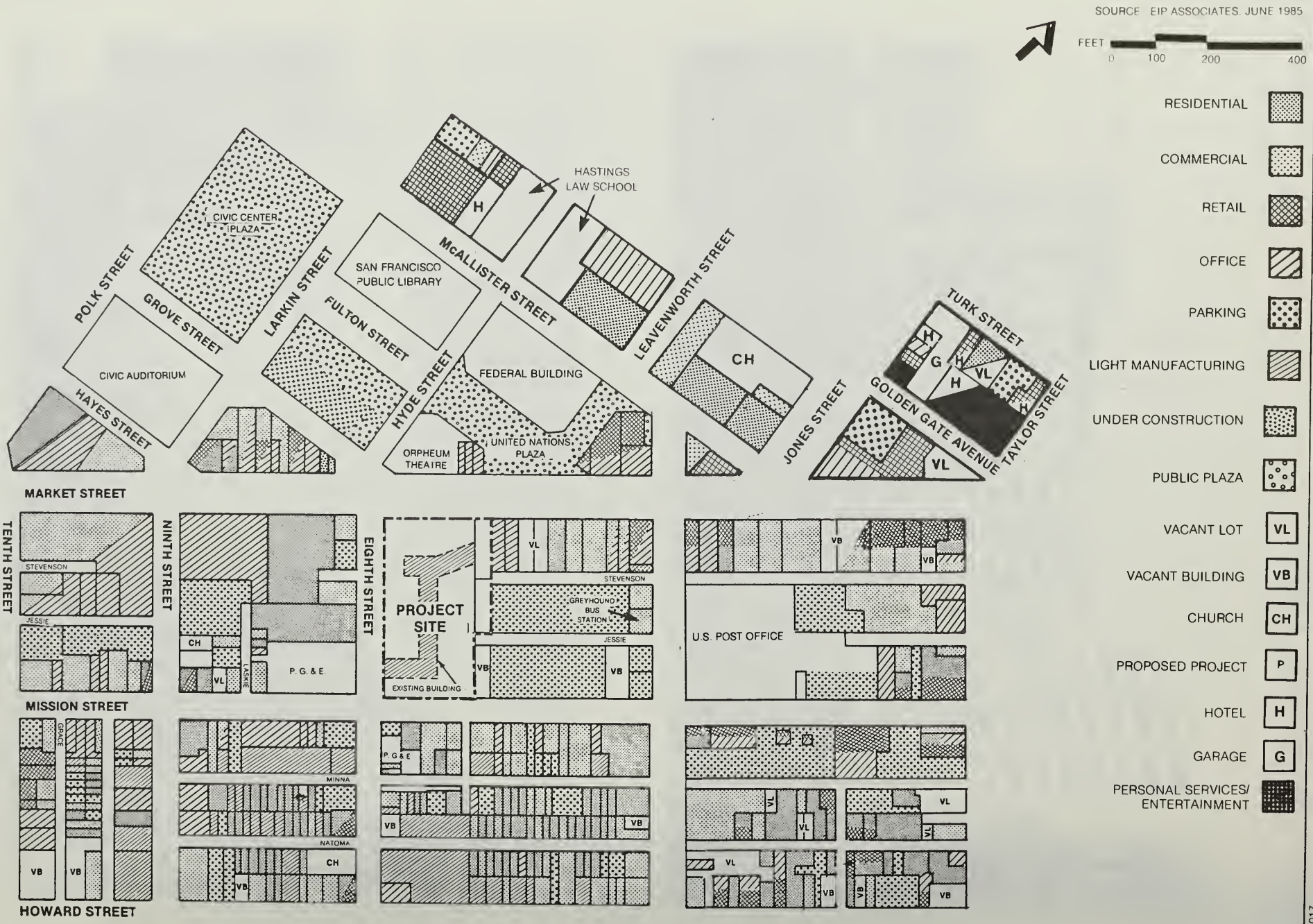
EXISTING LAND USE

FIGURE 12



The Tenderloin, roughly bordered by Market, Powell and Post Streets and Van Ness Avenue, lies to the north of the project site. Residential hotels provide housing for about 20,000 permanent residents and transients, making the Tenderloin one of the City's most densely populated areas. The population includes elderly citizens on fixed incomes, and Vietnamese and other Indochinese refugees, and other Asian immigrants.

United Nations Plaza lies to the north of the site, across Market Street. It is an open space that forms a gateway linking the Civic Center Plaza to Market Street. U.N. Plaza is an open space for the portion of Market Street between Sixth Street and Van Ness Avenue, which features a fountain and surrounding concentration of architecturally related structures. A Farmer's Market operates twice weekly on the Plaza and contributes to its value for area residents and workers. Buildings around U.N. Plaza include the 5-story, 60-foot-high Federal Office Building located between Leavenworth, Hyde and McAllister Streets; the recently completed 1170 Market Street (Mardikian) Building, a 95-foot-high structure; and the 6-story, 84-foot-high Bay Heritage Financial Building.

Buildings along Market Street, southwest of the project site, include the 13-story State Compensation Building at the southeast corner of Ninth and Market Streets, the 13-story San Franciscan Hotel at the southwest corner of Market and Eighth Streets, and Fox Plaza, a 29-story mixed-use residential/retail/office tower. The Orpheum Theater, a designated City landmark, is opposite the project site at the Market Street intersection of Hyde, Grove and Eighth Streets.

Across Eighth Street, southwest of the project site, is the 13-story Holiday Inn, Franklin Savings, and a parking structure. A 17-story expansion of the Holiday Inn (EE79.314) has been approved, but has not been constructed on a site currently containing a parking structure. The PG&E Mission Substation is located on the northwest corner of Eighth and Mission Streets. Along Mission Street, near the project site, buildings are predominantly

low-rise, two to four stories in height. There are a variety of commercial/retail uses along Mission Street, including clothing outlets, and electronic, auto-repair and import-export shops. These and other uses (e.g., office, warehouses) are also found elsewhere in the South of Market area.

2. Zoning

The project site lies in the C-3-G (Downtown Commercial General) zoning district in which the predominant permitted uses are retail, office, hotels and entertainment facilities (see Figure 13, page 33). The base permitted floor area ration (FAR) allowed in the C-3-G zoning district is 6.0:1.

The project site lies in three Height and Bulk Districts (Figure 14, page 34). The portion of the project site which fronts on Market Street, to a depth of 25 feet along Eighth Street, lies in the 120-X Height and Bulk District, which permits a maximum building height of 120 feet, with no maximum plan or diagonal dimension requirements.[1] From 25 feet deep along Eighth Street to Stevenson Street, the project site lies in the 150-S Height and Bulk District in which the maximum building height is 150 feet. From Stevenson Street to Mission Street, the project site lies in the 240-S District in which the maximum building height is 240 feet. Section 263.7 of the City Planning Code allows for "upper tower extensions" beyond the height limit in "S" Districts. An extension of up to ten percent of the maximum height in the district may be allowed under the provisions of Section 309 of the City Planning Code. For a detailed discussion of Height and Bulk controls, see Chapter IV.B., Impacts, page 65, and Table 5, page 68.

The Department of City Planning has prepared the Mid-Market Proposal for Citizen Review, which would, if adopted, result in lower height limits on the project site. The Mid-Market Street Revitalization and Conservation District, proposed by the Board of Supervisors, would have resulted in lower height limits on the project site. The proposal was withdrawn by the Board. Other interim controls proposed by the Board would also have resulted in lower height limits. None of these interim controls are currently in effect.

ZONING DISTRICTS

FIGURE 13

PROJECT SITE

ZONING DISTRICT BOUNDARY

MIXED HOUSE AND APARTMENT CHARACTER DISTRICTS **RM-2**

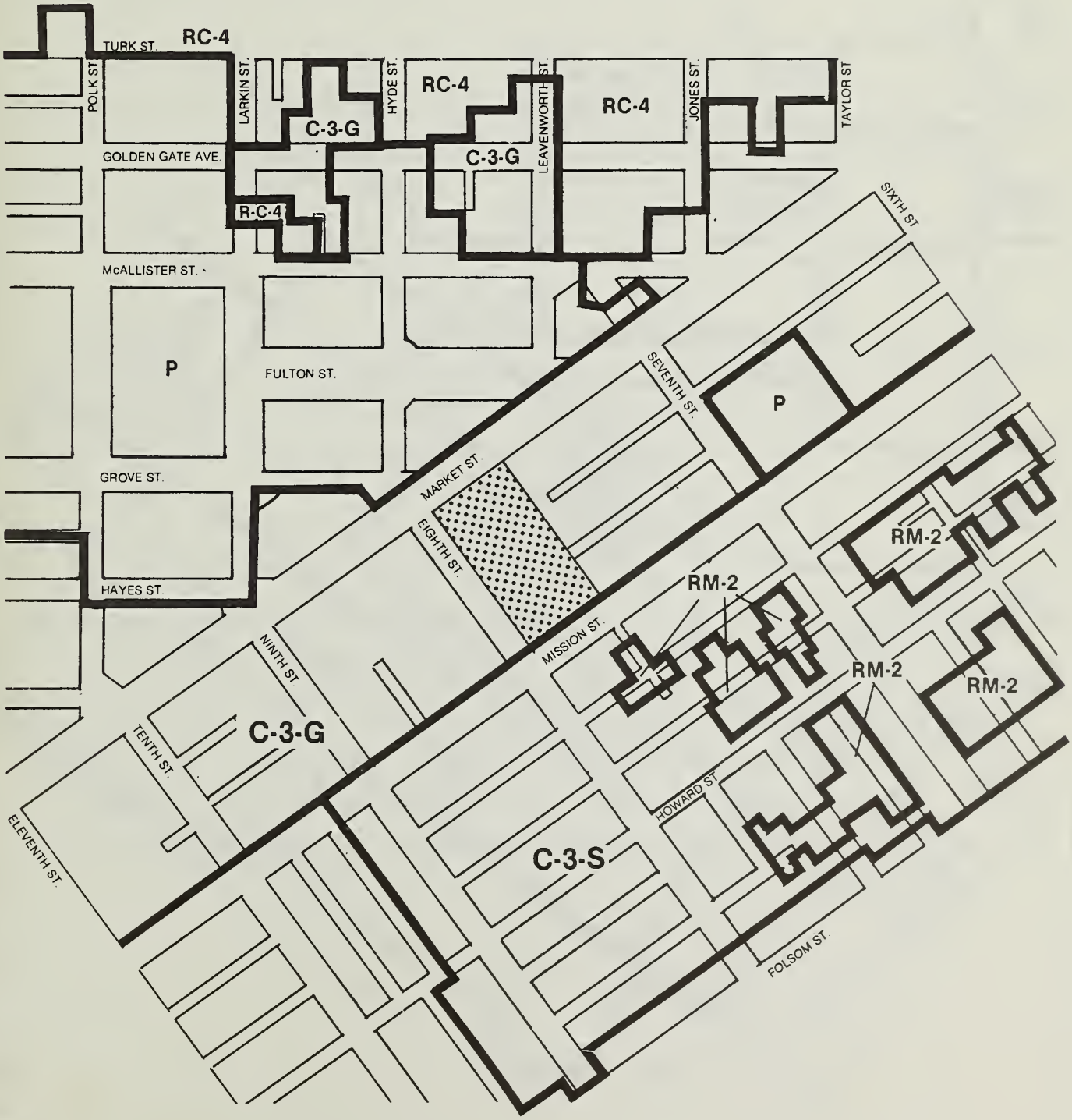
RESIDENTIAL COMMERCIAL COMBINED DISTRICTS **RC-4**

COMMERCIAL DISTRICTS **C-3-G, C-3-S**

PUBLIC DISTRICT **P**

SOURCE: CITY AND COUNTY OF SAN FRANCISCO

NOT TO SCALE



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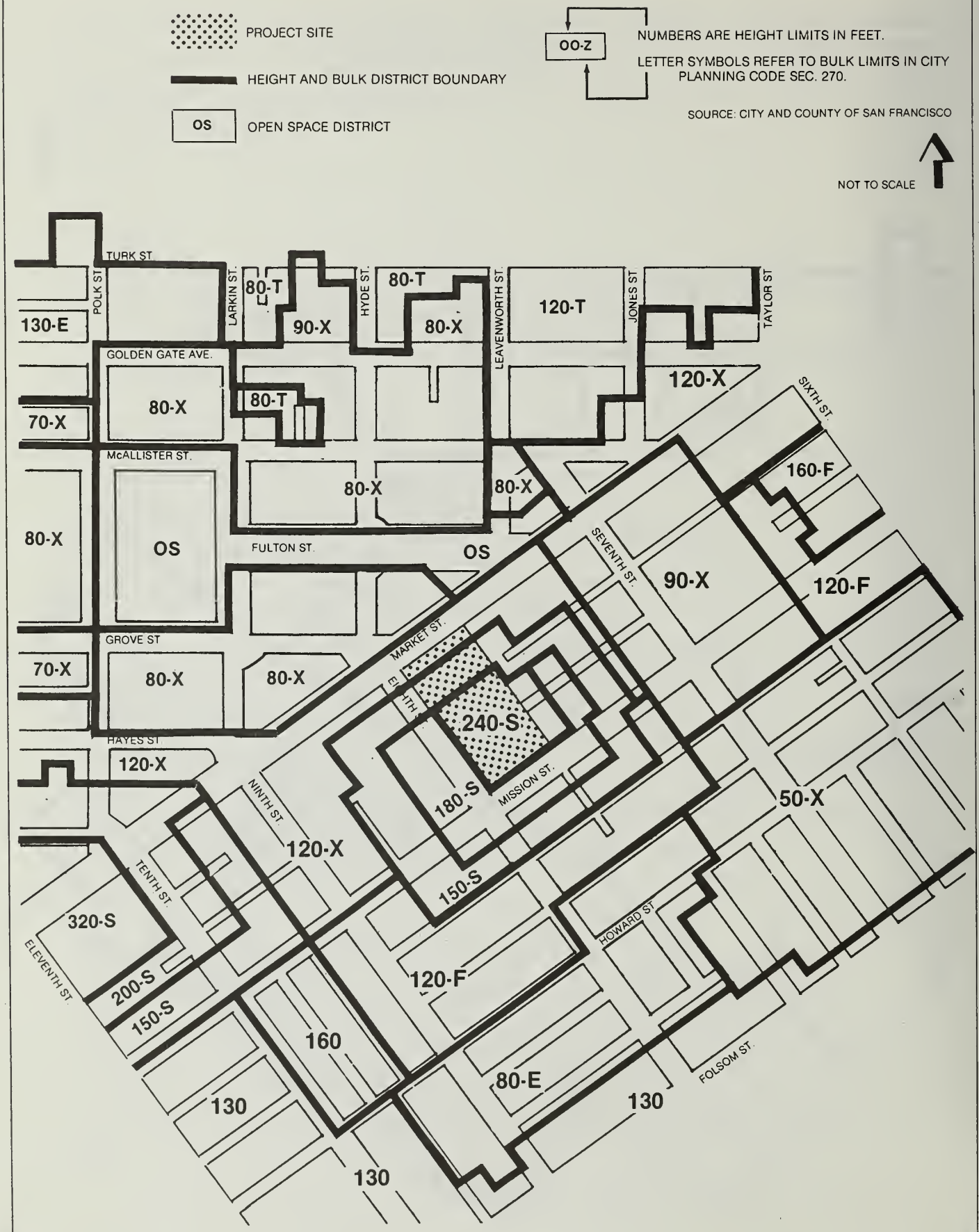
HEIGHT AND BULK DISTRICTS

FIGURE 14



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The rear yard requirement for residential projects in this district is an area equal to 25% of the total depth of the lot on which the building is situated (not less than 15 feet) as established in part (a) of Section 134 of the City Planning Code. Part (d) of the same section states that an exception to the rear yard requirement may be allowed in accordance with the provisions of Section 309 of the Code provided that the building location and configuration assure adequate light and air to windows within the residential units and to the open space provided.

Pursuant to Section 161(c) of the City Planning Code, off-street parking is not required in a C-3 District for non-residential uses; however, up to seven percent of the total gross floor area of the structure is allowed as an accessory use (Section 204.5(c)) and can be excluded from FAR calculations pursuant to Section 102.8(b).

To encourage ground floor activity and amenities, Section 102.8(b)13 of the City Planning Code permits the exclusion from FAR calculations of certain retail, restaurant, personal services, and related uses on the ground floor not to exceed 5,000 gsf per use, and not to exceed 75% of the area of the ground floor and ground-level open space.

3. Planning Context

The project is subject to objectives and policies stated in the Downtown Plan, a part of the San Francisco Master Plan, and the Commerce and Industry, and Residence Elements of the San Francisco Master Plan. For a detailed discussion of these policies, see below. Development of the project site is also subject to the off-street parking and loading policies under City Planning Commission Resolution 9286 and policies of the Transportation Element. These policies are discussed in detail in Section IV.E., Transportation, Circulation and Parking Impacts on pages 118-120.

The Commerce and Industry Element of the Master Plan contains objectives which apply to the proposed project.

> Objective 6, Policy 3: "Assure that downtown development is compatible with the design and character of San Francisco."[2]

The project would include design features to reflect existing streetwall heights along Market Street.

> Objective 6, Policy 4: "Provide adequate amenities for those who live, work and use downtown."[2]

The project would provide open space and retail services for project residents, project employees, and others in the project vicinity.

The following objectives and policies from the Residence Element are applicable:[3]

> Objective 1, Policy 3: "Promote the inclusion of housing in downtown commercial development."[3]

The project would include an increase of 1,641 apartment units in conjunction with office and retail space on a site in the downtown area.

> Objective 3, Policy 1: Discourage the demolition of existing housing.[3]

The project would entail the demolition of 358 existing rental units, prior to construction of 1,999 new units. Existing residents on the project site would be given opportunities to occupy newly constructed project units at lease rates applicable at the time of transfer.

> Objective 5, Policy 3: "Seek Inclusion of Low and Moderate Income Units in New Housing Development."

The project sponsor would include 925 rental units as part of the project that would be subject to the affordability guidelines of Section 124 of the City Planning Code.

Objective 7, Policy 6: "Provide adequate rental housing opportunities."[3]

The project would enhance rental housing opportunities in San Francisco by adding 1,641 units to the rental housing stock.

Objective 7, Policy 3: "Promote the availability of units suitable for groups with special housing needs including large families, the elderly, and those needing group housing and emergency shelter."

Objective 7, Policy 4: "Eliminate discrimination against households with children."

Objective 7, Policy 5: "Encourage economic integration in housing."

Objective 7, Policy 10: "Promote the availability of units suitable for persons with varied lifestyles."

The project would include units of various sizes and rental rates.

Objective 8, Policy 1: "Minimize relocation hardship and displacement caused by the demolition or conversion of housing."

Objective 8, Policy 2: "Permit displaced households the right of first refusal to occupy any replacement housing units."

The project sponsor would provide existing project site residents with opportunities to rent proposed units at levels equal to rates of existing units at the time of transfer. Further, the project would be phased so that 72 residential units (20% of the total) would be demolished as part of the first of two phases, and the remainder of the existing units (286 units) would be demolished as part of the second phase of construction.

There are also objectives and policies from the Downtown Plan that are applicable:[4] Under the Commercial Support section,

> Objective: "Retain a diverse base of support commercial activity in and near downtown."
>
> Policy: "Provide space for support commercial activities within the downtown and in adjacent areas."

The project would include 132,500 gsf of retail space within the C-3 District to serve residents and workers in the project vicinity.

Under the Open Space section,

> Objective: "Provide quality open space in sufficient quantity and variety to meet the needs of downtown workers, residents, and visitors."
>
> Policy: "Require usable indoor and outdoor open space, accessible to the public, as part of new downtown development."
>
> Objective: "Assure that open spaces are accessible and usable."
>
> Policy: "Encourage the creation of new open spaces that become a part of an interconnected pedestrian network."
>
> Policy: "Keep open space facilities available to the public."
>
> Policy: "Provide open space that is clearly visible and easily reached from the street or pedestrian way."

The project would include private and publicly accessible open spaces to meet the needs of downtown workers, residents, and visitors. Art in public spaces would also be included as part of the project.

[1] In "X" Districts where the average slope of the curb or the ground from which the height is measured is less than five percent, there are no requirements regarding bulk measurements. (See Section 260(a)(3) of the City Planning Code.)

[2] City and County of San Francisco, Department of City Planning, Commerce and Industry Policies and Objectives, adopted by the City Planning Commission, Resolution 8001, June 29, 1983, pages 26, 27 and 80.

[3] City and County of San Francisco, Department of City Planning, Residence Element, adopted by the City Planning Commission, Resolution 7417 on December 11, 1975, and amended by Resolution 10045 on June 28, 1984, pages 2.2, 2.8, 2.21.

[4] City and County of San Francisco, Department of City Planning, Downtown Plan, November 29, 1984.

B. URBAN DESIGN

The existing Trinity Apartments building is set back from the southeast corner of the intersection of Market and Eighth Streets and is a break in the continuous building wall along the south side of Market Street (Figure 11, page 29). The three- to seven-story earth-tone concrete structure is surrounded by surface parking on its north, west, and south sides. It is set back from market Street by approximately 70 feet of parking and a wide driveway. The building's irregular T-shape form also sets it apart from the predominantly rectilinear buildings along Market Street. Existing and proposed buildings on Market Street just east of the site have north-south orientations, and minimal setbacks from property lines. Building heights in the area vary from one story, or about 12 feet, to over 240 feet (Figure 15, page 41).

As seen from Market Street, the building's architectural style and lack of ornamentation set it apart from the nearby San Franciscan Hotel and Orpheum Theater. Both of these buildings include variable skeletal articulation, with long narrow bays defined by thin concrete colonettes. The building also contrasts with the design of the adjacent 1155 Market Street building which has a white stucco facade with strong horizontal lines along its Market Street and west facade. The 1155 Market Street building is 11 stories high (150 feet), or four stories higher than the tallest point of the Trinity Apartments building.

As seen from Eighth Street, the Trinity Apartments building is lower than the 11-story Holiday Inn, but taller than the one-story Coast Federal Savings building and furniture retail outlet. Eighth Street and surface parking at the west side of the site separate the existing building from these other structures on Eighth Street.

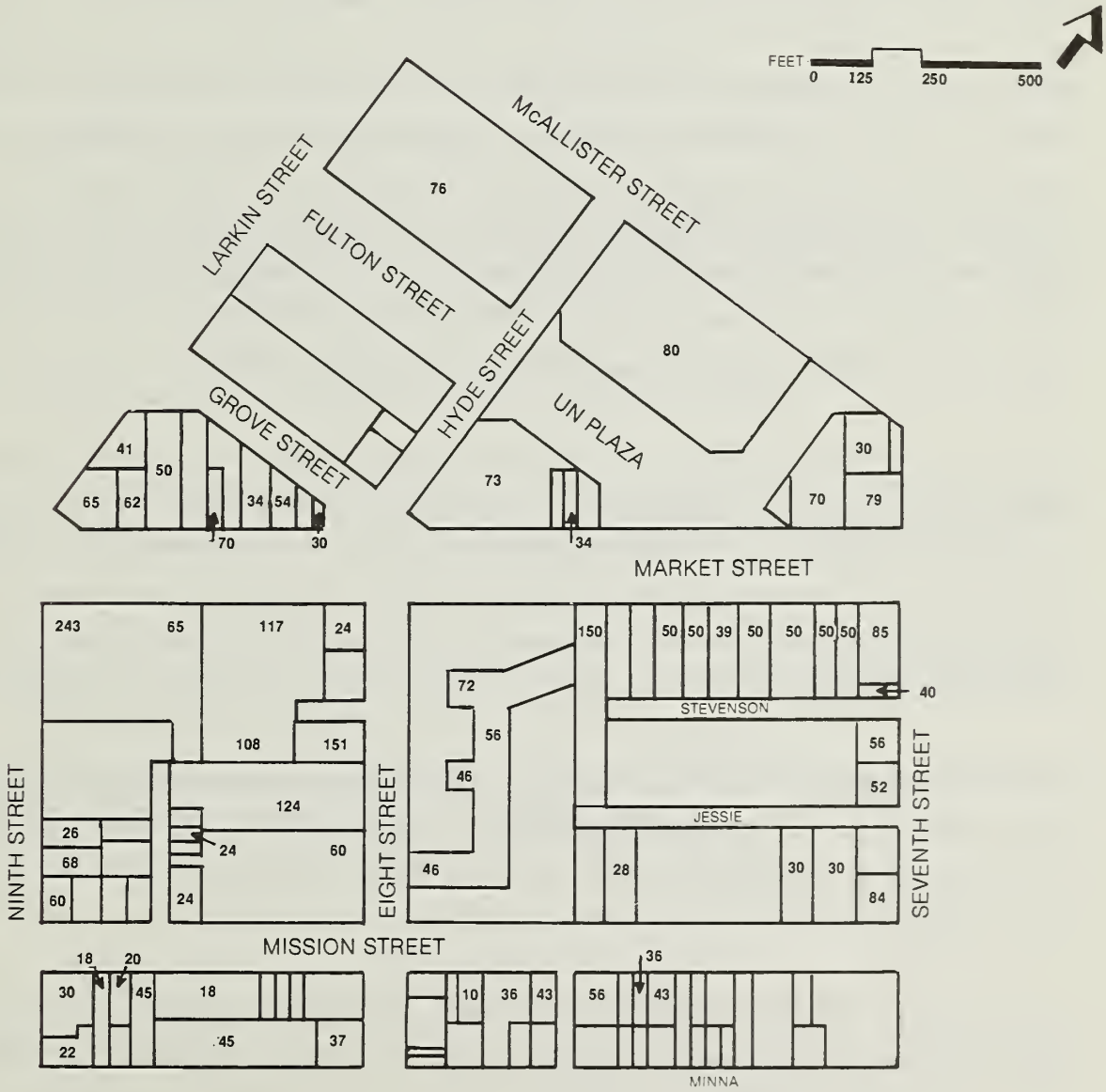
Views from the site are of Market Street, buildings along Market Street and taller buildings north of Market Street nearer the center of downtown. The United Nations Plaza and Civic Center Plaza are pedestrian open spaces seen from the site. The most comprehensive view of the project site on Market Street is available from the front of the Orpheum Theater directly across the street. The building on the site is not visible from Twin Peaks on the west because of intervening taller structures. The site is partly visible from long-range viewpoints to the south such as Potrero Hill. The existing building is generally not visible from the north or locations beyond the buildings and streets in the immediate project vicinity.

BUILDING HEIGHTS IN THE VICINITY

FIGURE 15

SOURCE EIP ASSOCIATES

NOTE HEIGHTS ARE IN FEET



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To the west of the site, from Ninth Street to Van Ness Avenue, there are several highrise buildings including the 29-story Fox Plaza building, one block southwest of the site on Market Street; the 29-story 100 Van Ness building; and the 21-story Bank of America Computer Center at Market and Eleventh Streets.

The building currently on the project site is set back from Mission Street about 100 feet, with the intervening area used as surface parking. Buildings to the south along Mission Street range in height from one to three stories, and are generally of concrete, brick or wood construction with few windows and little, if any, ornamentation.

Civic Center lies roughly 2 to 3 blocks northwest of the site. It was listed on the National Register of Historic Places on October 10, 1978 and is proposed for designation as a City Historic District (City Planning Commission Resolution No. 7807, October 6, 1979). It includes public buildings designed in Beaux Arts Classical architectural styles and is important as an intact example of City Beautiful era municipal planning. City Hall, the State Building, Public Library, Federal Office Building, Exposition Auditorium and the Department of Public Health are part of the Civic Center complex.

The San Francisco Department of City Planning conducted a citywide inventory of architecturally significant buildings in 1976. In the 1976 Department of City Planning Architectural Inventory, approximately 10% of the City's entire stock of buildings were awarded a rating for architectural merit ranging from a low of "0" to a high of "5." The total number of buildings which were rated from "3" to "5" represent less than 2% of the City's entire building stock.

The Downtown Plan categorizes historically and architecturally significant buildings into either Category I or II (significant buildings) or Category III or IV (contributory buildings). It is the intent of the Downtown Plan that only those buildings categorized I, II, III or IV would be protected within the C-3 area.

The Foundation for San Francisco's Architectural Heritage conducted a survey which assigned ratings to buildings in the C-3 District. The survey rated buildings from a high of "A" (Highest Importance) to "D" (Minor or No Importance). The criteria used in the

evaluation were based on guidelines of the National Trust for Historic Preservation, the National Register of Historic Places, and the State Historic Resources Inventory.

The existing building on the site is not rated by the the Downtown Plan, Foundation for San Francisco's Architectural Heritage (Heritage), or the 1976 Department of City Planning Architectural Inventory. The project site does not lie in or near a conservation district as described in the Downtown Plan. Several buildings in the area have, however, been rated by the Downtown Plan, Heritage, and/or the Department of City Planning. They include: Orpheum Theater (Landmark #84, Category "1" in the Downtown Plan/"A" by Heritage/"5" by the 1976 DCP Architectural Inventory); 1100 Market, Hotel Shaw ("I"/"B"/"4"); 1095 Market, Grant Building ("I"/"A"/"1"); and 1215 Market, San Franciscan Hotel ("II"). Heritage notes that if the existing building on the site:

> " . . . were in Miami Beach with a green lawn and palm trees in front it wouldn't look so bad. As it is, it is grotesquely out of place, breaking the long, continuous Market Street wall by setting far back from the street among parking lots, and possessing a style which bears no relationship to the city around it.
>
> "To make matters worse, its white and aqua colors have recently been painted 'earth tones,' thereby denying the building whatever integrity it had."

Heritage gives it a "Not Rated" designation. This designation is reserved for those "buildings which have been built or suffered insensitive exterior remodelings since 1945."[2]

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[1] Splendid Survivors, prepared by Charles Hall Page and Associates for the Foundation for San Francisco's Architectural Heritage, 1979, page 117.

[2] Splendid Survivors, prepared by Charles Hall Page and Associates for the Foundation for San Francisco's Architectural Heritage, 1979, pages 13 and 99.

C. SHADOWS AND WIND

1. Shadow

The existing structure on the project site casts shadows on streets and sidewalks in the project vicinity. Shadows from the existing building are cast onto portions of Market, Eighth and Mission Streets at different times of the day in certain seasons of the year. Open space in the project area includes United Nations Plaza and Hallidie Plaza located across Market Street to the north and northeast of the project site. The nearest open space protected by Proposition K in the vicinity of the proposed project is Civic Center Plaza to the west of the project site. Existing and project shadow patterns for various times of the day and year are discussed in detail in Section IV.D, pages 88 through 105, and are shown in Figures 23 through 29, pages 89 through 98 and page 104.

2. Wind[1]

U.S. Weather Bureau and Bay Area Air Quality Management District data show that westerly (i.e., from the west), southwesterly and northwesterly winds are the most frequent and strongest winds during all seasons in San Francisco.[2] Of the 16 primary wind directions measured at the Weather Bureau station, four wind directions (northwest, west-northwest, west, and west-southwest) compose the greatest frequency of occurrence as well as the majority of strong wind occurrences in San Francisco.

Average wind speeds are highest during summer and lowest during winter months. However, the strongest peak winds occur during the winter, when average speeds of more than 34 mph or more for one hour have been recorded. The highest average wind speeds are in the mid-afternoon, and the lowest are in the early morning. Peak wind speeds are distributed evenly throughout the day.

Pedestrian Comfort and Wind Criteria

Wind conditions in San Francisco partially determine pedestrian comfort on sidewalks and in other public areas. In downtown areas, flat-walled high-rise buildings can redirect wind flows around the buildings and divert winds downward to street level. Each can result in increased wind speed and turbulence at street level.

The comfort of pedestrians varies under different conditions of sun exposure, cool and warm temperatures, light and heavy clothing, and various wind speeds. Existing wind speeds at 20 sidewalk locations tested in the project vicinity range from four to 15 mph with 16 of the 20 values 11 mph or less. The windiest location is at the intersection of Market and Eighth Streets (see Appendix E, Figure E-1, page A-39).

With an intent to provide a comfortable wind environment for people in the downtown, Section 148 of the City Planning Code establishes an equivalent (including the effects of turbulence) windspeed (as defined in the Code) of 11 mph as the comfort criterion and 26 mph as the wind hazard criterion. Section 148 sets comfort levels of 11 mph equivalent wind speeds for areas of substantial pedestrian use and 7 mph for public seating areas. New buildings and additions to buildings may not cause ground-level winds that would exceed these levels more than 10% of the time year round between 7:00 a.m. and 6:00 p.m. Exceptions may be requested under Section 309 of the City Planning Code. No building or addition that would cause wind speeds to exceed the 26 mph hazard level for a single hour of any year would be permitted.

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[1]This section is based on a study entitled "Wind Tunnel Analysis for the Proposed Trinity Plaza Project," October, 1985 prepared by Don Ballanti, Certified Consulting Meteorologist, as a private subconsultant to EIP Associates. A summary of the study finds is included in Appendix E, pages A-37 to A-39, and the study data are on file at the Department of City Planning, 450 McAllister Street, San Francisco, CA.

[2]The U.S. Weather Bureau data were collected from 1891 to 1930 at 465 California Street near Montgomery Street. The Bay Area Air Quality Management District data were collected in the mid-1970s at Ellis Street, near Van Ness Avenue. (The BAAQMD station is now at 900 23rd Street.)

[3]The U.S. Weather Bureau data used in the analysis were originally acquired at the weather station atop the old Federal Building at 50 United Nations Plaza during the years 1945-47 hourly on an annual basis for 16 wind directions.

D. TRANSPORTATION, CIRCULATION AND PARKING

In the vicinity of the project site, Howard, Folsom, Harrison, Hyde and Larkin Streets are designated Primary Vehicular Streets in the Transportation Element of the Master Plan,[1] while Market and Mission Streets are designated Transit Preferential Streets. Sixth Street north of Folsom and Van Ness Avenue is designated as both a Primary Vehicular Street and Transit Preferential Street. Regional access to and from the east bay and peninsula is available via the Bay Bridge and Highway 101 with on-ramps at Seventh/Harrison and Tenth/Bryant and off-ramps at Seventh/Bryant and Ninth/Bryant. Civic Center traffic to the north bay generally travels along Van Ness Avenue and Franklin Street.

Adjacent to the project site, Market Street is currently striped for four through lanes, two lanes in each direction. Parking is prohibited on both sides of the street. Left turns are prohibited in both directions at Eighth Street. A turnout bay is provided directly in front of the project site for truck loading only at all times. The bay has space for about three vehicles.

Eighth Street is one-way southbound and is striped for four through lanes between Market and Mission Streets. Traffic volume peaks during the evening commute period as employees leave the Civic Center area. The intersection of Eighth and Market operates at Level of Service C. (See Appendix B, Table B-3, page A-20, for a description of vehicle levels of service.)

Metered parking stalls are striped on both sides of the street. There are 17 stalls along the curb adjacent to the project. The existing parking fee is 50 cents per hour, with a one hour time limit. Late night parking is prohibited on selected weeknights to clear the street for cleaning. One existing driveway on the east side of Eighth Street provides vehicle access to the site. The driveway is located about 100 feet south of Market Street, and is the only existing vehicle access point in use.

Mission Street is striped for two lanes in each direction east of Eighth Street. During the evening commute period (4-6 PM), each curb lane is restricted to use by buses and right turning vehicles only. The intersection of Mission and Eighth operates at Level of

Service D. During the same period, parking is prohibited on both sides of the streets, although the parking lanes are not then utilized as additional through lanes, as is typical elsewhere in the City. Another driveway is located in the southeast corner of the project site, however it is not currently in use. All vehicle traffic from the site uses the driveway on Eighth Street.

Muni operates 23 routes within two blocks of the project site (Figure 32, page 115). The 5 Fulton runs along Market Street near the site and links the site to the Transbay Terminal at one end, and to the University of San Francisco and the eastern edge of Golden Gate Park at the other end. The 12 Folsom runs mainly on Folsom Street and provides weekday daytime service to Mission and 26th Streets. The 13 Guerrero links the site to the Noe Valley area via Guerrero and 24th Streets. The 14, 14L Mission operates on Mission Street and links the site to Daly City and the Excelsior District. The 14X Mission Express line runs along Mission Street and I-280 and provides peak hour service to Daly City and the Excelsior District. Muni stops are located close to the Eighth/Market and Eighth/Mission intersections although not on the project's frontage. Other Muni lines in the project vicinity include the 6, 7, 8, 9, 21, 66L, 71, 71L, J, K, L, M and N lines, all of which run on Market Street past the project site. The 16 runs on Mission Street, the 16X and 72X run on Golden Gate, Turk and Franklin, the 19 runs on both Eighth and Ninth Streets, the 26 runs on Market, Eighth and Mission, the 27 on Fifth, while the 42 and 47 run on Van Ness and Eleventh.

An entrance to the Civic Center BART and Muni underground stations is located on Market Street directly in front of the site. San Mateo County's transit lines (Samtrans), which serves the Peninsula, operates lines 5M, 7B, and 7F on Mission Street next to the site and stop at the corner of Eighth Street as part of their route to the Transbay Terminal. Caltran provides rail service to the Peninsula from the depot at Fourth and Townsend Streets. One Golden Gate Transit line runs along Seventh Street and links the site to the North Bay. The San Francisco Airporter buses have a stop on the east side of Eighth Street between Mission and Market Streets. Independently owned and operated Jitneys provide service along the entire length of Mission Street (from The Embarcadero to Daly City) during the a.m. and p.m. commute hours. The San Francisco Greyhound terminal is located immediately east of the site between Mission and Stevenson Streets. AC Transit provides bus service to the East Bay from the East Bay Terminal, which is accessible via Muni.

The RIDES carpool program, operating as a nonprofit, publicly funded corporation, provides consulting and matching services to help establish Bay Area carpools and vanpools.

The project site is within the C-3-G District, which has no requirement for off-street parking for commercial uses. The site is in an area designated as the Downtown Core Automobile Control area in the Transportation Element of the Master Plan. Policies of the Plan propose reducing the number of private commuter vehicles and excess automobile traffic in the Downtown Core and discourage the addition of new long-term commuter parking. The project site currently has a parking lot for 330 cars including 73 spaces below grade. Most of the stalls are for use by residents, employees or patrons of the site. Approximately 100 stalls are rented to drivers who do not live or do business on the site.[2] The on-site parking is generally 70 percent occupied over the day. This results in higher than normal vehicle volumes from the site during the peak period than would be typical for a residential site in the downtown area (126 vehicle trips in the PM peak hour).[3]

Off-street parking is required for the residential land uses in the C-3 District. Section 151 of the City Planning Code requires one space for each four dwelling units. Accessory parking is permitted up to 150% of the required number of spaces in residential projects where three or more spaces are required by the Code (Section 204.5(C)).

Parking area in excess of the amount identified as accessory parking would require Conditional Use authorization pursuant to Sections 157 and 303(c) of the City Planning Code. Authorization for such a use must be granted by the City Planning Commission. Specific criteria must be considered by the Commission in addition to those stated in other sections of the City Planning Code, including a demonstration of the demand for additional parking beyond that considered as an accessory use, and a demonstration of the absence of potential detrimental effects of the additional parking.

Parking not classified as an accessory use in a C-3 District is also considered a major parking garage, according to Section 158 of the City Planning Code. The City Planning Commission must review the garage using criteria reflecting concerns regarding accessi-

bility, location, minimization of conflicts with pedestrian movements and amenities, the service patterns of other forms of transportation, and conformity with the Transportation Element of the Master Plan.

Section 303 of the City Planning Code provides guidelines for the Conditional Use review process. As stated above, that portion of parking area in excess of seven percent of total project floor area would be considered a Conditional Use, would be considered a parking garage if located in a C-3 District, and would be subject to review criteria in Sections 157 and 158 of the Planning Code, in addition to those found in Section 303.

Off-street loading requirements for a project are in Section 152.5 of the City Planning Code. Section 153(a)6 of the Code permits substitution of two service vehicle spaces for each required off-street freight loading space, provided that a minimum of 50% of the required number of spaces are provided for freight loading.

A survey of the existing off-street parking available to the public in the site vicinity indicates that a total of 2,277 parking stalls exist within two blocks of the site which are 83 percent occupied on a typical weekday (Figure 16, page 50). The daily parking rate for these lots varies from $2.00 to $9.00. Existing on- and off-street parking near the project site is over 90 percent occupied during weekdays.[4]

Mission, Market, Howard, Folsom, Ninth and Tenth Streets have been designated as Preferred Commute Bike Routes in the Transportation Element of the City's Master Plan. Only Howard and Folsom Streets are currently striped with bike lanes.

There are sidewalks on each street fronting the site. The sidewalk on Market Street is 30 feet wide, with about 15 feet of this width occupied by street light poles, trees, benches, and kiosks, leaving the remaining 15 feet free for through pedestrian use. The Eighth Street sidewalk is 10 feet wide, with an 8 foot unobstructed width. The Mission Street sidewalk is 15 feet wide adjacent to the site, with a 12 foot unobstructed width. At the Mission/Eighth Street intersection, the crosswalk across Mission Street on the east side of the intersection is 20 feet wide. The remaining three crosswalks are 10 feet wide.

PUBLIC OFF-STREET PARKING

FIGURE 16

At the Market/Eighth Street intersection all crosswalks are 20 feet wide and paved with brick.

Field counts of pedestrian volumes were taken on the Market Street sidewalk and crosswalk and on the Mission Street sidewalk and crosswalk along the project frontage in May, 1985.[5] Pedestrian access to the site occurs along the Market Street frontage. A chain link fence restricts pedestrian access on Eighth and Mission Streets. One opening is provided in the southeast corner of the site, but use of the opening was not observed during the field survey. Pedestrian flow rates range from Open to Unimpeded. (See Appendix B, Table B-2, page A-24 for a description of flow rates.)

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[1]San Francisco Department of City Planning, Transportation: An Element of the Master Plan, January 1983. The Master Plan defines Primary Vehicular Streets as major routes for automobile and truck movements into and out of the downtown area, chiefly to and from the parking belts for automobiles. Transit Preferential Streets are defined as important streets for transit operations where interference with transit vehicles by other traffic should be minimized.

[2]Telephone conversation with Mac Suzuki, Trinity Plaza, June 19, 1985.

[3]Field survey conducted by EIP, on-street and off-street parking survey including number of stalls, occupancy and rates, on Thursday, May 30, 1985. Data on file and available for public review at the Office of Environmental Review, Department of City Planning, City and County of San Francisco, 450 McAllister Street.

[4]See footnote 2.

[5]Field survey conducted by EIP, Tuesday, May 28, 1985, between noon and 1:00 p.m.

E. AIR QUALITY

The Bay Area Air Quality Management District (BAAQMD) operates a regional monitoring network that measures the ambient concentrations of six air pollutants: ozone (O_3), carbon monoxide (CO), total suspended particulates (TSP), lead (Pb), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). On the basis of the monitoring data, the Bay Area, including San Francisco, currently is designated a non-attainment area with respect to the federal ozone and CO standards. A three-year summary of the data collected at the BAAQMD monitoring station nearest the project site (about two miles southeast at 900 23rd Street) is shown in Appendix C, page A-31, together with the corresponding federal and/or state ambient air quality standards. In 1984, there was one violation of the federal and state ozone standards, one violation of federal and state eight-hour CO standards, and five violations of the previous state 24-hour average TSP standard; in 1983, there was one violation of the federal and state one-hour average ozone standards and four violations of the previous state 24-hour average TSP standard; in 1982 there was one violation of the federal and state eight-hour CO standard, and three violations of the previous state 24-hour average TSP standard; and in 1981 there was one violation of the previous state 24-hour average TSP standard.[1]

BAAQMD has conducted two CO "hotspot" monitoring programs in the Bay Area, including San Francisco. One CO monitoring program was conducted during the winter of 1979-80 and included the intersection of Washington and Battery Streets in San Francisco, about one mile northeast of the site.[2] The high eight-hour average concentration was 10.1 ppm, which violates the 9-ppm state and federal standards by 1.1 ppm. The high one-hour average concentration of 15 ppm does not violate the 20-ppm state standard or the 35-ppm federal standard. Another CO monitoring program was conducted during the winter of 1980-81 and included the San Francisco intersections of Geary and Taylor Streets, about one-half mile northeast of the site, and at 100 Harrison Street at Spear, about 1 mile northeast of the site.[3] At Geary and Taylor the observed high eight-hour average concentration was 11.5 ppm, which violates the standards by 2.5 ppm and the high one-hour concentration was 15 ppm, which does not violate the standards. At Harrison Street the observed high eight-hour and one-hour average concentrations were 7.8 ppm and 13 ppm, respectively, which do not violate the standards. These data indicate that locations in San Francisco near streets with high traffic volumes and congested flows may

experience violations of the eight-hour CO standard under adverse meteorological conditions. In December 1985, the City monitored CO and counted traffic at the Sixth and Brannan intersection. These data are still being analyzed.

Comparisons of these data with those from other BAAQMD monitoring stations indicate that San Francisco's air quality is among the least degraded of all the developed portions of the Bay Area. Two of the three prevailing winds, westerly and northwesterly blowing off the Pacific Ocean reduce the potential for San Francisco to receive pollutants from elsewhere in the region.

San Francisco's air quality problems, primarily CO and TSP, are due largely to pollutant emissions from within the City. CO is a non-reactive pollutant and its major source is motor vehicles. CO concentrations are generally higher during periods of peak traffic congestion. TSP levels are relatively low near the coast, increase with distance inland, and peak in dry, sheltered valleys. The primary sources of TSP in San Francisco are demolition and construction activities, and motor vehicle travel over paved roads.

San Francisco contributes to regional air quality problems, including ozone, which affect other parts of the Bay Area. Ozone is not emitted directly from sources, but is produced in the atmosphere over time and distance through a complex series of photochemical reactions involving hydrocarbon (HC) and nitrogen oxide (NOx) emissions, which are carried downwind as photochemical reaction occurs. Ozone standards are exceeded most often in the Santa Clara, Livermore, and Diablo Valleys, because the local topography and meteorological conditions favor the build up of ozone and its precursors.

In 1982, motor vehicles were the source of 86% of the CO, 46% of the hydrocarbons (HC), 44% of the TSP, and 56% of the nitrogen oxides (NOx) emitted in San Francisco, while power plant fuel combustion was the largest single source of sulfur oxides (SOx), about 33% of the total.[4] These percentages are expected to apply reasonably well to current conditions.

In response to the Bay Area's ozone and CO nonattainment designations, the Association of Bay Area Governments (ABAG), BAAQMD, and the Metropolitan Transportation

Commission (MTC) prepared and adopted the 1982 Bay Area Air Quality Plan, which establishes pollution control strategies to attain federal ozone and CO standards by 1987 as required by federal law.[5] These strategies were developed on the basis of detailed subregional emission inventories and projections, and mathematical models of pollutant behavior, and consist of stationary and mobile source emission controls and transportation improvements. The BAAQMD, MTC, and California Bureau of Automotive Repair (a state agency) have primary responsibility for implementation of these strategies.

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[1] State standards for particulate matter changed in 1983 to concentrate on fine particular matter which through inhalation has been demonstrated to have health implications. Concentration standards also changed. There is not yet an adopted method for monitoring fine particulate matter. Until the State adopts a method, it is not possible to determine what proportion of TSP in San Francisco would be subject to review against the new standards.

[2] Association of Bay Area Governments, AQMP Tech Memo 33, "Summary of 1979/1980 Hotspot Monitoring Program," Berkeley, California, June 1980.

[3] Association of Bay Area Governments, AQMP Tech Memo 40, "Results of the 1980/1981 Hotspot Monitoring Program for Carbon Monoxide," Berkeley, California, January 1982.

[4] Bay Area Air Quality Management District (BAAQMD), "Base Year 1979 Emissions Inventory Summary Report," San Francisco, California, November 1, 1982.

[5] Association of Bay Area Governments (ABAG), BAAQMD and MTC, 1982 Bay Area Air Quality Plan, Berkeley, California, December 1982.

F. HISTORIC AND CULTURAL RESOURCES

The project site is situated within previous marshlands. The US Coast Survey maps of 1852, 1859, 1869 and 1883 indicate that the proposed project area was vacant.[1] On November 27, 1884, Central Park at Market and Eighth Streets opened to the public; a baseball field was opened in 1885.[2] The 1899 Sanborn Insurance maps,[3] updated to 1905, show the locations of various structures within the park including Central Theatre Hall, Skating Rink and Ball Courts. One and two story wood-frame structures lined Misson, Eighth and Market Streets on the site. Adjacent to the site along Market Street were various saloons, the Empire, Bell and Graumans Theaters, a billiard and bowling alley and the Old Fellows (I.O.O.F.) Building.

The Sanborn Map[4] corrected to 1912 shows the site as Central Park yet the only structures are located on the northwest portion of the project site. Along Eighth and Market these structures were small wood frame. Immediately behind these structures was a new Central Theater, the first being destroyed along with all other structures on the site during the earthquake and fire of 1906. The existing structure, Trinity Plaza, was constructed in 1960.

Several architecturally significant buildings exist on the project block: the Odd Fellows Temple built in 1909; 1115-1117 Market, built in 1920; the Embassy Theater built in 1905, rebuilt 1907; and the Strand Theater built in 1917.[5]

The proposed project area contains no archaeological sites listed in the National Register of Historic Places or in the California Inventory of Historic Resources. A prehistoric site has been recorded adjacent to the project site at Market Street between 7th and 8th Streets at a depth of 75 feet.[6]

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[1] Christian Gerike, Assistant Coordinator, California Archaeological Inventory Northwest Information Center, letter, November 6, 1985.

[2] Gladys Hansen, San Francisco Almanac, Chronicle Books, 1975.

[3] Sanborn Insurance Company Maps, "San Francisco Volume 2," 1899, updated 1905.

[4]Sanborn Insurance Company Maps, "San Francisco Volume 2," 1899, updated November 1912.

[5]Charles Hall Page and Associates, Inc., Splendid Survivors, San Francisco's Downtown Architectural Heritage, Michael R. Corbett, Editor, prepared for The Foundation for San Francisco's Architectural Heritage, 1979.

[6]Christian Gerike, Assistant Coordinator, California Archaeological Inventory, Northwest Information Center, letter of November 6, 1985, and telephone message of October 20, 1986 from Christian Gerike to Sally Maxwell, Office of Environmental Review, verifying that the November, 1985 recommendation remained appropriate.

G. EMPLOYMENT, POPULATION AND HOUSING

1. Employment

Businesses at the site employ about 25 workers (see Table 3, page 58) in a variety of occupations.[1] In the existing building are: a grocery store, a restaurant, a bar, a barber shop, and the building management office. There are also a private security firm, a photography studio and a law office. Approximately nine people are employed in these firms which have not been used in the base case analysis for calculation of project impacts.

2. Downtown San Francisco Space

In 1984, it was estimated that the C-3 District contained about 103.5 million gsf of building space over all land uses. About 60% of this space was office space. The next largest share was hotel space at ten percent of the total, followed by retail at eight percent.[2]

The Department of City Planning has compiled data on office building construction since 1960. According to the City's data, in 1983, there were 64.3 million gsf of space in major office buildings throughout the City. Most of this office space is in the C-3 District. Between 1960 and 1979, office space was built at an average rate of 1.4 million gsf per year. Recently, office construction activity has risen to higher levels. The data compiled by the Department of City Planning show 12.2 million gsf built from 1980 through 1983, for an average rate of about 3.0 million gsf per year.

Downtown San Francisco is likely to continue to be the office center of the Bay Area region. Forecasts of development between 1984 and 2000 prepared for the Downtown Plan EIR estimate that an additional 21.7 million gsf of space in all uses would be built and occupied in the C-3 District. Most of this additional space (16.8 million gsf, almost 80 percent of the total) would be office space. According to the Downtown Plan EIR forecasts, the rate of new office construction in the C-3 District would average about 1.1 million gsf per year between 1984 and 2000.[3]

TABLE 3

EXISTING ON-SITE EMPLOYMENT

Establishment	No. of Employees
Retail	
Trinity Shears	2
Trinity One Stop Groceries	1
Restaurant and Bar	
Townhouse Bar	3
Townhouse Restaurant	3
Parking and Building Management	16
	25

Source: Mac Suzuki, Building Property Manager, Trinity Properties.

3. Office Vacancy Rates and Commercial Rents

On the basis of a 1984 citywide survey of 315 office buildings, the San Francisco Building Owners and Managers Association (BOMA) reported a citywide office vacancy rate of 6.8%.[4] This rate is a decrease from the 7.1% rate reported by BOMA in its October 1983 survey, and an increase over the 3.7% rate reported in a 1982 survey and the one percent rate reported in a 1981 survey. According to a March 1986 Coldwell Banker survey, the vacancy rate in downtown San Francisco office buildings (new, existing and major renovations) was 15.7%.[5] The 15.7% rate is an increase from 0.1% during June 1981 and 6.1% during June 1983 (earlier Coldwell Banker surveys). The vacancy rate for March 1986 is the highest that has been reported for San Francisco since Coldwell Banker started this survey in 1978. The current 15.7% vacancy rate is the fifteenth lowest of the 36 major downtown financial districts surveyed by Coldwell Banker compared to 1984, when the City's office vacancy rate was the fifth lowest of 32 major downtown financial districts surveyed. For comparison, as of March 1986 the office vacancy rate was 16.5% nationally; 11.0% in Chicago; 10.8% in downtown Manhattan; 18.4% in Dallas; and 23.0% in San Jose.[6]

The surveys indicate a general trend of increasing vacancy rates for downtown San Francisco office buildings over the last four years. This increase is the result of several factors, including an increase in the amount of available office space (new space being completed and space available for sublease), a decrease in the demand for office space, and the nationwide economic recession. Higher vacancy rates point to a softer office market than has existed in recent years. According to Coldwell Banker, this trend appears to be continuing, as only 18% of new office space expected on the market in San Francisco in 1986 has been pre-leased.[7] This is in marked contrast to Coldwell Banker's 1983 report, which found that "Demand for prime office space in San Francisco's financial district remains strong as evidenced by healthy levels of preleasing activity in new buildings."[8]

There has been a concurrent demand for and development of office space elsewhere in the Bay Area. Some businesses have moved clerical, support, and production departments to outlying areas while maintaining headquarters and main branch offices in San Francisco. In particular, the City of Oakland, and San Mateo and Contra Costa Counties are

experiencing increased demand for office space. Approximately 2-3 million square feet of office space is proposed for construction in Oakland over the next two years,[9] about 3 million square feet of office space is proposed or under construction along the U.S. 101 corridor in San Mateo County,[10] and about 3 million square feet of space is proposed or under construction in central Contra Costa County.[11] These totals include projects in various stages of public review, not all of which may be approved or built.

As a result of the demand in San Francisco and increasing operating costs, land prices, construction costs, and interest rates, annual rents for office space in the downtown financial district have more than tripled in the last decade, from $8.50 per square foot in 1970 to approximately $32 per square foot in 1985.[12] New buildings are able to charge the highest rents, while rents in older buildings in the financial district are less expensive, averaging approximately $8-10 per square feet less than in new buildings.[13] The rents for new office space in San Francisco ($28 to $35 per square foot) are about 30-40% higher than commercial rents in Oakland ($18 to $30 per square foot); the Peninsula ($21 to $25 per square foot); and Contra Costa County ($21 to $27 per square foot).[14] Should the recent rise in vacancy rates continue, the pressure for higher commercial office rents would be expected to decline in San Francisco. A rising vacancy rate could lower rents and increase future lessees' choice for size, layout and location of office space.

4. Population and Housing

The building existing on-site contains 358 rental units of which 354 are currently occupied. 353 of the 358 units are studio apartments and 5 are one-bedroom apartments. Two hundred and eighteen (61%) of the units have been occupied for under one year, 100 (28%) of the units for one year, and 40 (11%) for more than three years. Sixty percent of the tenants are single individuals and couples and 40% are families. The studio apartments rent from $475 to $850 monthly, and the one-bedroom apartments rent from $900 to $1,500 monthly. Duration of contract leases varies from one month to one year.[15] Rents in the building are under the jurisdiction of the San Francisco Rent Stabilization Board. Rent increases are approved annually by the San Francisco Rent Stabilization Board, and may not exceed 7% of rent at the time of the annual review.[16]

The housing stock in San Francisco and the region is characterized by low growth rates, low vacancy rates for rental units, and high purchase prices and rental costs in relation to typical wages paid. These factors, some of which would normally stimulate new housing construction, are in part the result of high interest rates and land costs which have constricted the supply and affordability of housing in San Francisco.

San Francisco has about 308,000 occupied housing units, according to a 1985 California Department of Finance estimate; about two-thirds of the housing stock is rented and one-third is owner-occupied.[17] Housing units completed in 1982 totalled about 590 units; of these, about 170 units were developed through public action and about 420 units were developed by the private sector.[18] The average 1980 market value of a single-family house was $140,000 in the Bay Area and $148,000 in San Francisco.[19] The 1980 Census reports a 1980 median value of $104,600 for single-family units (not including condominiums), and a vacancy rate of 1.0% for owner-occupied dwellings in San Francisco.[20] Coldwell Banker, in its Fall 1985 nationwide survey of single-family home prices, found that San Francisco has the highest home prices in the nation.[21] Census data for 1980 indicated a median rent in the City of $267 and a vacancy rate of 4.2% for rental units. The Census data include residential hotels and subsidized housing. A survey conducted by the Federal Home Loan Bank of San Francisco in September 1983 indicated a vacancy rate of 0.9% for multi-family units and 1.2% for single-family houses.[22] The total number of units added to the housing stock in 1984 was 790. Of this total, 447 (56%) were rental units, 243 were condominiums (31%), and 100 (13%) were single family households.[23] A vacancy rate of four to five percent indicates a competitive market; the very low rate in San Francisco means that people looking for housing are having difficulty finding new residences. This high demand for housing may also cause further price increases.

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[1] Mac Suzuki, Building Property Manager, Trinity Properties, telephone conversation, June 20, 1985.

[2] San Francisco Department of City Planning, Downtown Plan Environmental Impact Report (EIR), EE81.3, Certified October 18, 1984, Volume 1, page IV.B.17. The estimates of C-3 District building space for 1984 are based on 1981/82 data for the C-3

District collected for the Downtown Plan analysis. The Downtown EIR Land Use Inventory was conducted to provide a base case from which the land use impacts of the Downtown Plan and Alternatives could be analyzed. The Inventory data on C-3 District space by use and subarea are presented in Table IV.B.1, on page IV.B.2 of the Downtown Plan EIR. The estimates of land use change between 1981 and 1984 primarily reflect the projects under construction in the C-3 District as of mid-1982 and are presented on pages IV.B.14 to IV.B.16 of the Downtown Plan EIR. The text discusses the real estate market context for these short-term projections of land use change. It indicates that the amount of office space under construction exceeded the projected demand estimated according to longer-term employment growth forecasts prepared for the Downtown Plan analysis. Therefore, some of the space assumed to be built by 1984 (and included in the 1984 totals identified herein) would be absorbed later in the 1980s. These sections of the Downtown Plan EIR are hereby incorporated by reference pursuant to State CEQA Guidelines, Section 15150. The C-3 District Land Use Inventory is available for public review at the Department of City Planning.

[3] Ibid., pages IB.V.34-35. This estimate accounts for new construction, as well as demolition and conversion of existing space.

The forecasts presented in this paragraph and the following paragraph for the Alternatives represent space that would be built and absorbed by 2000. Space that will be under construction and not yet occupied in 2000 is not included in the forecasts for 2000 for the Downtown Plan and Alternatives. Therefore, the annual average data from the forecasts are not directly comparable to annual averages for recent short-term (1980-83) office construction, as shown on the list compiled by the Department of City Planning. The short-term data include some projects that are not yet fully occupied.

[4] Elmer Johnson, Building Owners and Managers Association, telephone conversations, December 22, 1982, June 12, 1984, October 3, 1984, and January 5, 1985.

[5] Coldwell Banker, Office Vacancy Index of the United States, March 31, 196. San Francisco vacancy rates are determined in a national survey of 32 major office districts conducted quarterly. A copy of the survey is on file and available for public review at the Department of City Planning, Office of Environmental Review, 450 McAllister Street, Sixth Floor.

[6] Ibid.

[7] Michelle Gibson, Property Manager, Coldwell Banker Commercial Real Estate, telephone conversation, January 3, 1986.

[8] Coldwell Banker, Office Vacancy Index of the United States, June 30, 1983.

[9] Jeff Smith, Commercial Real Estate Analyst, Cushman and Wakefield, telephone conversation, January 3, 1986.

[10]Jennifer Dixon, Commercial Real Estate Analyst, Cushman and Wakefield, telephone conversation, January 3, 1986.

[11]Glen Dowling, Commercial Real Estate Analyst, Cushman and Wakefield, telephone conversation, January 3, 1986.

[12]James Hoagland, Commercial Real Estate Analyst, Cushman and Wake, telephone conversation, January 3, 1986.

[13]Ibid.

[14]See footnotes 7-10.

[15]See footnote 1.

[16]Information provided by San Francisco Rent Stabilization Board, telephone conversation, July 25, 1985.

[17]Association of Bay Area Governments (ABAG), "Census Data Bulletin No. 6," March 1982.

[18]San Francisco Department of City Planning, Housing Information Series: Changes in the San Francisco Housing Inventory, 1981 and 1982, September 1983.

[19]Security Pacific Bank, "Monthly Summary of Business Conditions - Northern Coastal," March 31, 1981, p. 2.

[20]City Planning Information Services, "1980 Census Information," March 1982.

[21]Coldwell Banker, Comparable Home Prices Market Analysis, Fall, 1985.

[22]Federal Home Loan Bank of San Francisco, "San Francisco County Housing Vacancy Survey," April 1984.

[23]Roger Herrera, Department of City Planning, telephone conversation, July 25, 1985.

IV. ENVIRONMENTAL IMPACTS

A. ISSUES NOT ADDRESSED

An Initial Study for the Trinity Plaza project was published on October 21, 1983, and identified potential environmental issues resulting from the proposed project; these issues are covered in this EIR. Certain potential environmental issues were determined to be insignificant and are therefore not addressed in this EIR, including operational noise, odors or burning of materials, utilities and public services (except for fire protection services), biology, surface water, health hazards, air moisture and temperature, and project-related geological impacts. A copy of the Final Initial Study is incorporated into this report as Appendix A, page A-1, and may be referred to for discussion of these issues. Subsequent to the Initial Study, the Department of City Planning determined that historic and cultural resources required further analysis.

Not all issues covered in the EIR are physical environmental impacts as defined by the California Environmental Quality Act (CEQA). They are included for informational purposes only.

B. LAND USE AND ZONING

1. Land Use

The existing buildings and parking lot would be demolished and the site would be excavated for construction of the proposed project. The proposed project would increase the variety and intensity of uses on the site. The project would increase the amount of residential and parking, office, commercial-retail, and open space uses onsite. The total gross floor area of the project would be 2,245,670 gross square feet (gsf).

The proposed project would result in a net increase of 1,303,585 gsf (1,641 units) of residential space, 49,600 gsf of office space, 122,050 gsf of retail space, 574 parking spaces and about 119,865 gsf of open space. Table 4, page 68 summarizes the changes in land use on the project site as a result of the proposed project.

The proposed project would be consistent with the description of the C-3-G (Downtown General) District contained in Section 210.3 of the City Planning Code. The district

> ". . . covers the northern and western portions of downtown and is composed of a variety of uses: retail, offices, hotels, entertainment, clubs and institutions, and high-density residential. Many of these uses have a city-wide or regional function, although the intensity of development is lower here than in the downtown core area . . . . [P]ortions of this district automobile parking is a major land use, serving this district and the adjacent office and retail core areas. In the vicinity of Market Street, the configuration of this district reflects easy accessibility by rapid transit."

There are a number of projects proposed for development or currently under construction in the area. In the 13 blocks surrounding the project site area (Assessor's Blocks 347, 348, 349, 351, 353, 354, 355, 3701, 3702, 3703, 3726, 3727, 3728), two projects have been completed, one is currently under construction, one has been approved but is not under construction, one project is currently under formal review by the Department of City Planning and one project is under formal review by the State of California. If all of these projects are completed, 48,000 gsf of retail space would be lost, and 1,240,380 gsf of office space would be gained in the project vicinity.

TABLE 4

PROJECTED CHANGE IN LAND USES
(In Gross Square Feet)

Land Use	Existing	Proposed	Net Change
Residential	147,150 gsf	1,450,735 gsf	1,303,585 gsf
(units)	(358)	(1,999)	(1,641)
Vacant	22,400	--	(22,400)
Office	--	49,600	49,600
Retail and Personal Services	10,450	132,500	122,050
Mechanical	6,000	42,400	36,400
Tenant Storage	22,756	48,565	25,809
Open Space	2,000	121,865	119,865
Tenant Recreation	1,000	8,500	7,500
Circulation and Service	9,000	58,055	49,055
Parking and Loading	127,373	333,450	206,077
(spaces)	(330)	(904)	(574)
Total Constructed Area	348,129 gsf	2,245,670 gsf	1,655,064 gsf

Source: EIP Associates.

The projects recently completed are the 1155 Market Street project which is adjacent to the project site on the project block, and the 10 United Nations Plaza project, located directly across the street from the proposed project on Assessor's Block 351. The 1155 Market Street project includes 138,700 gsf of net new office space and 8,800 gsf of net new retail space and the 10 United Nations Plaza project contains 92,050 gsf of net new office space.

Currently under construction is the 1170 Market Street project across the street from the project site on Assessor's Block 351. Upon completion, this project will provide 40,000 gsf of net new office space.

The 1145 Market Street project has been approved but is not yet under construction and is on the project block next to the 1155 Market Street site. This project consists of 108,500 gsf of net new office space and 8,000 gsf of net new retail space.

Under formal review are the State Office Building located on Assessor's Block 347, and the 1035-1045 Market Street project on Assessor's Block 3702. The State Office Building project would contain 226,880 gsf of net new office space and the 1035-1045 Market Street project would contain 60,000 gsf net new office space. Because these projects are under formal review, they are still subject to change prior to project approval.

2. Zoning

The proposed project has been evaluated in the context of the amendments to the City Planning Code to implement the Downtown Plan; the evaluation is summarized in Table 5 (page 70).

The basic floor area ratio (FAR) for the C-3-G District as established in Section 124 of the City Planning Code is 6.0:1. Section 124(f) establishes that in C-3-G Districts, additional square footage for dwellings above that permitted by the base FAR may be approved by the City Planning Commission, provided those units have affordable rents as prescribed in Section 124(f). Up to 5,000 gsf each of ground-floor retail and personal service space may be excluded from FAR calculations pursuant to Section 102(b)(12) of the City Planning Code.

TABLE 5

COMPARISON OF PROPOSED PROJECT TO THE CITY PLANNING CODE

Major Controls Pertaining to Site	Proposed Project	City Planning Code
FAR (Section 124)	FAR 9.81:1 including all uses; 1.58:1 (excluding residential area)	6.0:1
Height Limit (Exhibit B) (Bulk Section 270)	25 foot setback at 90 feet, then 150 feet on Market Street building; 240 feet on towers, with 24-foot upper tower extension.	120, 150 and 240 feet with additional upper tower extension of 10% or 24 ft in the 240 district.
Height of Base		Height of building base may not exceed 1.25 times width of the widest abutting street; may not be lower than 50 feet.
Market St. Building	90 feet	
Residential Towers	50 feet	
Maximum Length		
Market St. Building	-----	N/A
Residential Towers		
Lower Tower	124.5	160.0
Upper Tower	124.5	130.0
Maximum Diagonal		
Market St. Building	-----	N/A
Residential Tower		
Lower Tower	174.0	190.0
Upper Tower	150.5	160.0
Average Floor Area (gsf)		
Residential Towers	11,625	12,000
Lower Tower	14,625	20,000
Upper Tower	11,615	12,000

TABLE 5 (cont.)

Major Controls Pertaining to Site	Proposed Project	City Planning Code
Upper Tower Extension (Sections 263.9 and 270(d)(3)(B))	Upper towers of residential buildings would be in excess of the 10,530 gsf per floor average permitted by approximately 1,085 gsf per floor, or 55,335 gsf. Project would require an exception to Code Section.	Extension of upper tower up to 10% of permitted height, provided upper tower volume is reduced by percentage shown in Chart 3 of Section 270(d)(3)(B) of Planning Code.
Area Excluded from FAR Calculation (Section 102.8)	121,865 gsf of open space; and, 58,055 of service area, 276,645 gsf of accessory parking area; 5,000 gsf of ground floor retail space; 5,000 gsf of ground floor personal services space.	According to Section 102.8(b), excluded from FAR calculations are: child care facilities; mechanical space, replacement short-term parking; cultural, religious and social service facilities; ground-floor pedestrian circulation and building service space; and ground-floor and mezzanine-level space devoted to personal services, restaurants and convenience retail (not to exceed 75% of the area of ground-floor interior and open space).

TABLE 5 (cont.)

Major Controls Pertaining to Site	Proposed Project	City Planning Code
Recreation/Open Space Sections 135 & 138)	121,865 gsf of open space, including 36,115 gsf of private open space, 57,750 gsf of common open space, and 28,000 gsf of non-residential (public) open space. Another project of the sponsor, 1145 Market Street (81.549E), is located within 200 feet of the project site. As part of the September 10, 1986 Conditions of Approval for 1145 Market Street, the project sponsor is required to provide 2,500 gsf of publicly accessible open space within 200 feet of the 1145 Market Street site, or pay fees totalling approximately $164,000, within one year of the issuance of the initial Certificate of Occupancy.[1] The project sponsor has not yet determined whether fee payments or identification of a portion of the open space in the Trinity Plaza project is an appropriate response to the 1145 Market Street conditions of approval.	For residential use, 36 sq ft required for each dwelling for a total of 71,964 gsf. Deficit of 35,849 gsf results in requirement for 47,679 gsf of common open space. One foot per 50 feet of non-residential (public) space, for a total of 3,842 gsf.
	The project would not include toilet facilities; an exception would be required.	Provision of toilet facilities open to the public if open space is provided on-site.

TABLE 5 (cont.)

Major Controls Pertaining to Site	Proposed Project	City Planning Code
Off-Street Loading (Section 152.5)	12 loading spaces; number would exceed Planning Code requirement.	0.1 spaces per 10,000 sq ft of office space (1 space), plus 1 space per 25,000 sq. ft. for retail space (5 spaces), plus 3 spaces for apartments and 2 spaces for each additional 400,000 sq. ft. above 500,000 ft. for residential space (5 spaces) for a total of 11 spaces.
Front Yard Setback (Section 146)	25 feet from Market Street above 90 feet.	25 feet from Market Street above 90 feet.
Rear Yard Setback (Section 134)	No rear yard setback; exception to Planning Code would be required.	25% of total depth of lot on which building situated not less than 15 ft.
Parking (Sections 151 & 204.5)	904 parking spaces proposed for exclusive use by project residents. 154 parking spaces in excess of required and accessory spaces; Conditional Use permit would be required.	For residential use in C-3 District, 1 space for each 4 dwelling units (500 spaces) plus 50% additional spaces (250) for a total of 750.
Incorporation of Art (Section 149)	Sponsor would comply with Planning Code.	Public Art equal to one percent of total construction cost.
Sunlight Access (Sections 147 and 295)	Project would shadow a portion of Civic Center Plaza during the first two hours of sunlight throughout the year; project would also shadow approximately 3-5% of United Nations Plaza during the winter.	Minimize substantial shadow impacts on public plazas and other publicly accessible spaces, without unduly restricting development potential; consider duration, area, and importance of sunlight to utility of open space.

TABLE 5 (cont.)

Major Controls Pertaining to Site	Proposed Project	City Planning Code
Wind (Section 148)	Project would increase existing wind-speeds above the 11 mph comfort criterion at one of 21 measurement locations onsite and in the project vicinity, and exceed the 7 mph sitting area criterion at one of six measurement locations onsite. Exception to Planning Code would be required via Section 309 permit review process.	Ground-level winds may not exceed more than 10% of the time year round between 7 a.m. and 6 p.m., 11 mph in areas of substantial pedstrian use and 7 mph in public seating areas.
Affordable Housing (Section 124)	925 units as part of floor area above base FAR would be subject to affordability guidelines and be considered a Conditional Use.	Base FAR may be exceeded for construction of onsite dwellings affordable for 20 years to household with incomes within 150% of median income as defined by the Planning Code.
Architectural Resources (Section 1110)	No significant buildings would be demolished.	No demolition of significant buildings (Categories I and II).
Park Fund (Section 139)	Project would comply with Plan Ordinance through payment of $99,200.	Downtown park Fund fee of $2 per sq ft of net new office space to enhance recreational opportunities in the downtown area.

[1] City and County of San Francisco, Department of Public Works, Adopting Findings Affirming the Issuance of Site Permit No. 522281 for a Proposal Office/Commercial Structure (1145 Market Street); Appeal No. 84-269, September 10, 1986.

Source: EIP Associates; Backen, Arrigoni and Ross, Architects; San Francisco City Planning Code.

The FAR for the proposed project, including all residential and commercial uses, would be about 9.8:1, which would be in excess of the 6.0:1 base floor area ratio limit in the C-3-G District. The sponsor would request additional square footage above the base floor area ratio limits for dwellings, in accordance with Section 124(f) of the City Planning Code. This Code section allows additional square footage above that permitted by the base FAR for construction of dwellings on the project site, affordable for 20 years to households whose incomes are within 150 percent of the median income as defined in the Code, in accordance with Conditional Use procedures and criteria as provided in Section 303 of the Code. The project would exceed the base FAR floor area total by 671,233 gsf, which would represent 925 dwelling units (43.4% of all units), and would require Conditional Use authorization. If the residential floor area were excluded from the project, the FAR would be about 1.6:1, which would be less than the base floor area ratio limit for the C-3-G District.

The demolition of the existing dwelling units on the project site as part of the project would require Conditional Use authorization, pursuant to City Planning Code Section 303. The loss of 358 units would be offset by the construction of 1,999 units, resulting in a net increase of 1,641 units on the project site.

The "S" Bulk zone controls apply to four components of a new structure: base, lower tower, upper tower, and upper tower extension. The general principle of the controls is to decrease bulk with increased height. The lowest portion of the building is the "base," which has a maximum height of 50 feet or 1.25 times the width of the widest abutting street, whichever is greater. The portion of the building above the base is divided into a lower tower, upper tower, and upper tower extension. The height of the lower tower is defined by the Bulk Zone Elevation. In the 240-S District, the maximum height of the lower tower is 160 feet, the maximum plan length is 160 feet, the maximum average diagonal dimension is 190 feet and the maximum average floor size is 20,000 square feet. For the upper tower, maximum plan length is 130 feet, the maximum average diagonal dimension is 160 feet, and the maximum average floor size is 12,000 square feet (with an absolute maximum of 17,000 square feet).

The upper towers of the residential buildings would exceed the volume allowed under Section 270(d)(3)(B) of the City Planning Code, which requires a volume reduction in the upper tower floor area if the average floor size of the lower tower were extended to the building height. In the residential towers the volume reduction, as proposed would be 20.6%, 7.4% less than required. The project sponsor would require an exception to the volume reduction requirements pursuant to Sections 263.7, 272 and 309 of the City Planning Code.

Section 138 of the City Planning Code provides standards for open space design. Included at Section 138(d)(10) is the requirement that toilet facilities open to the public be provided if open space is on project property. The project would not include a public toilet, requiring an exception to be considered under Section 309.

The rear yard requirement for residential projects in the C-3-G District is an area equal to 25% of the total depth of the lot on which the building is situated (not less than 15 feet) as established in Section 134(a) of the City Planning Code. Part (d) of the same section states that an exception to the rear yard requirement may be allowed in accordance with the provisions of Section 309 of the Code provided that the building location and configuration assure adequate light and air to windows within the residential units and to the open space provided. The project would require Section 309 review for an exception to the rear yard setback requirement because no setback is provided as part of the project.

Off-street parking is required for the residential land uses in the C-3 District. Section 151 of the City Planing Code requires one space for each four dwelling units. Application of this Code section to the project would result in a requirement of 500 spaces. Accessory parking is permitted up to 50% of the required number of spaces in residential projects where three or more spaces are required by the Code (Section 204.5(C)). Thus, 250 additional parking spaces would be permitted, for a total of 750 permitted spaces (approximately 276,645 gsf). As the project would provide 904 spaces, excess parking totalling 154 spaces (56,805 gsf) would be subject to Conditional Use authorization pursuant to Section 204.5(c) of the City Planning Code.

Section 303 of the City Planning Code provides guidelines for the Conditional Use review process. That portion of parking area considered excess would be considered a Conditional Use, would be considered a parking garage if located in a C-3 District, and would be subject to review criteria in Sections 157 and 158 of the City Planning Code, in addition to those found in Section 303. Considerations in the Section 303 review would include compatibility of a parking garage with the surrounding neighborhood, an assessment of whether or not a garage would be detrimental to the health, safety, convenience, or general welfare of persons in the vicinity, and conformity with the provisions of the City Planning Code and Master Plan.

To encourage ground floor activity and amenities, Section 102.8(b)13 of the City Planning Code permits the exclusion of certain retail, restaurant, personal services, and related uses from FAR calculation provided the uses are located on the ground floor not to exceed 5,000 gsf per use, and not to exceed 75% of the area of the ground floor and ground-level open space. Ten thousand square feet of ground floor retail and personal services uses could be excluded from the project prior to calculation of FAR.

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[1]Section 263.9(a) of the City Planning Code, provides exceptions for upper tower extensions in S Districts. Additional height up to 10% of the heights shown on Maps 1H, 2H and 7H of the Zoning Map may be allowed as an extension of the upper tower provided that the volume of the upper tower as extended is reduced by the percentage shown in Chart B of Section 270(c) of the City Planning Code.

C. URBAN DESIGN

The Urban Design Element of the San Francisco Master Plan contains policies and principles which may be used to evaluate the proposed project. Table 6, page 77, the Relationship Between Applicable Urban Design Policies of the Master Plan and the Proposed Project, compares the project to these policies.

The project would replace one seven-story apartment structure of 180,000 gsf with a high-rise development larger in scale than existing older South of Market development and also larger in scale than recent and proposed high-rise buildings in the South of Market area. The project's office and residential towers would be 240 feet high, 168 feet higher than the existing building in the project site and up to 230 feet higher than adjacent buildings. The towers would be about 160 feet higher than major buildings in the Civic Center area, such as the Public Library, the Federal Building and the Opera Building. The 150-foot Market Street building would be 100 feet higher than the existing buildings and equal in height to the 1155 Market Street building and about 80 feet higher than the Orpheum Theater structure across Market Street. The 25-foot setback at 90 feet would visually reduce the apparent height of the building.

The project would contain two residential high-rise towers of 28 stories, and one 17-story office tower. The towers would have a cruciform shape with towers set into corner panel areas. The vertical tower orientation would be accentuated by a central shaft of windows on each facade, extending from the base to the roof. The topmost floor of the towers would consist of four pyramid roof shelters. A circular plaza adjoins the towers to the ten-story building located on the Market Street frontage, and would be accessible to the public from both Market and Eighth Streets.

The building would include detailing and coloring similar to the design of the Civic Center buildings and Federal Office Building adjacent to the United Nations Plaza directly across Market Street from the project. On Market Street the project buildings would continue the frontage lines of currently existing buildings, thus accentuating the Market Street corridor.

TABLE 6

RELATIONSHIP BETWEEN APPLICABLE URBAN DESIGN POLICIES OF THE MASTER PLAN AND THE PROPOSED PROJECT

URBAN DESIGN PLAN POLICIES	RELATIONSHIP OF PROJECT TO POLICIES
Objective 3, Policy 1 - "Promote harmony in the visual relationships and transitions between new and older buildings. New buildings should be made sympathetic to the scale, form, and proportion of older development."	The project would introduce three high-rise and one medium-rise building in a block of medium-rise buildings (heights in area are from 8 to 12 stories). To the north and east of the project site are high-rise structures. Low to medium-rise development is generally located south and west of the site. See also discussion for Objective 3, Policy 6.
Objective 3, Policy 2 - "Avoid extreme contrasts in color, shape and other characteristics which will cause new buildings to stand out in excess of their public importance."	The buildings would be similar in shape and style with other public buildings in the Civic Center area such as the City Library and Brooks Hall. The Market Street building would be similar in height to these buildings while the residential towers would be taller than these buildings.
Objective 3, Policy 3 - "Promote efforts to achieve high quality of design for buildings to be constructed at prominent locations."	The project site is visually prominent site due to its location on Market Street, near public transportation facilities (Civic Center BART and MUNI stations), and adjacent to the Civic Center-UN Plaza area. The project would feature a Market Street frontage that would be similar in height and architectural features to existing development in the project vicinity. The Market Street frontage would serve as a transition between the street and the publicly accessible open space in the center of the project site.
Objective 3, Policy 4 - "Promote building forms that will respect and improve the integrity of open spaces and other public areas."	The project would increase shadows on the U.N. and Civic Center Plazas.

TABLE 6 (cont.)

URBAN DESIGN PLAN POLICIES	RELATIONSHIP OF PROJECT TO POLICIES
Objective 3, Policy 5 - "Relate the height of buildings to important attributes of the city pattern and to the height and character of existing development."	The project would be visible on the City skyline when viewed from such areas as Twin Peaks and Potrero Hill. The building heights of the proposed project would contrast with the low to medium-height buildings of the south of Market area, which are generally 30-130 feet in the project vicinity. Building heights of proposed project would be similar to heights of buildings in the Civic Center area such as City Hall, the Holiday Inn, and the Hastings Law School tower.
Objective 3, Policy 6 - "Relate the bulk of buildings to the prevailing scale of development to avoid an overwhelming or dominating appearance in new construction."	The project would be greater in bulk than older low to medium-rise buildings in the vicinity. The bulk of the project would be comparable to those of nearby high-rise structures (e.g., the GSA building at Market and Eleventh Streets) and major public buildings in the Civic Center area such as Brooks Hall and the City Library. The residential towers would be about 75-200 feet higher than existing development in the project area. The vertical glass bays and setbacks are intended to visually reduce the apparent horizontal dimensions.
Objective 1, Policy 3 - "Recognize that buildings, when seen together, produce a total effect that characterizes the City and its districts."	The project would be visible from medium and long-range viewpoints. From Potrero Hill and Twin Peaks, the project would be visible as part of a group of high-rise structures of the Civic Center area. In short range views in the immediate project area, the project would be in contrast to the low- to medium-scale character of the area.
Objective 1, Policy 7 - "Recognize the natural boundaries of districts and promote connections between districts."	The project site is located on the edge of the South of Market district, across the street from the North of Market area and adjacent to the Civic Center. Elements of the project design such as romanesque roof shape and concrete masonry fluted treatment would be similar to the classical architectural style of the Civic Center .

TABLE 6 (cont.)

URBAN DESIGN PLAN POLICIES	RELATIONSHIP OF PROJECT TO POLICIES
Objective 1, Policy 8 - "Increase the visibility of major destination areas and other points for orientation."	The project would be higher than buildings in the immediate project area and thus would add to the long-range visibility of the Civic Center area and of the mid-Market Street corridor.
Objective 2, Policy 6 - "Respect the character of older development nearby in the design of new buildings."	The project would differ in form and scale from neighboring older buildings on Mission, Minna and Market Streets. The building facade materials would be stone, metal and glass; older buildings in the area are mostly stucco, stone or brick. The design of the project would have features that would be similar to the classical architectural style of the Civic Center area.
DOWNTOWN PLAN POLICIES	
"Foster sculpturing of building form to create less overpowering buildings and more interesting building tops, particularly the tops of towers."	The project would respond to this policy by sculpturing building forms, providing building detail and tapering tops of towers.
"Create visually interesting terminations to building towers."	The project would include tapered towers that would provide definite terminations to building tops.
"Maintain separation between buildings to preserve light and air and prevent excessive bulk."	The project would feature three towers that would maintain light and air between buildings.
"Promote building forms that will maximize the sun access to open spaces and other public areas."	The project would cast new shadows on open spaces (Civic Center and UN Plazas).
"Promote building forms that will minimize the creation of surface winds near the base of buildings."	The project would increase existing wind speeds above the 11 mph comfort criterion in one of 27 locations measured on and near the project site.
"Ensure that new facades relate harmoniously with nearby facade patterns."	The building facade materials would be stone, metal and glass; older buildings in the area are mostly stucco, stone, or brick. The design of the project would have features that would be similar to the classical architectural style of the Civic Center area.

TABLE 6 (cont.)

DOWNTOWN PLAN POLICIES	RELATIONSHIP OF PROJECT TO POLICIES
"Encourage more variation in building facades and greater harmony with older buildings through use of architectural embellishments or recessed windows."	Project facade detailing would result in greater harmony with existing development than the current structures on the project site.
"Conserve the traditional street to building relationship that characterizes downtown San Francisco."	The Market, Eighth and Mission Street frontages would include the traditional street-building relationship found in the City.
"Provide setbacks above a building base to maintain the continuity of the predominant streetwalls along the street."	The provide would step back above the base along Market and Eighth Streets; no stepback is incorporated into the project for the Mission Street frontage.
"Maintain and enhance the traditional downtown street pattern of projecting cornices on smaller buildings and projecting belt courses on taller buildings."	The project building height and cornice features on the Market Street frontage would contribute to the relationship of building facades to the street established by the 1145 and 1155 Market Street buildings.
"Use designs and materials and include activities at the ground floor to create pedestrian interest."	The project would feature retail and open space on the ground floor, thus enhancing the potential for pedestrian interest.

The project would be visible from medium and long-range viewpoints (Figures 17-22, pages 82-87). In short range views in the immediate project area, the project would contrast with the low to medium-scale character of the area (Figure 18, page 83). From the Potrero Hill area and Twin Peaks, the project would be visible as part of a group of high-rise structures of the Civic Center area (Figures 21 and 22, pages 86 and 87).

PHOTOMONTAGE OF THE PROJECT LOOKING FROM UN PLAZA

FIGURE 17

SOURCE: SQUARE ONE FILM & VIDEO

85017

PHOTOMONTAGE OF THE PROJECT LOOKING NORTH FROM EIGHTH STREET

FIGURE 18

SOURCE SQUARE ONE FILM & VIDEO

A5017

PHOTOMONTAGES OF THE PROJECT

FIGURE 19

SOURCE SQUARE ONE FILM & VIDEO

A. LOOKING NORTH ON MISSION STREET

B. CORNER OF EIGHTH AND MARKET STREETS

85017

PHOTOMONTAGE OF THE PROJECT LOOKING EAST ACROSS CIVIC CENTER PLAZA FROM THE STEPS OF CITY HALL

FIGURE 20

SOURCE: SQUARE ONE FILM & VIDEO

PHOTOMONTAGE OF THE PROJECT LOOKING NORTH FROM THE U.S. 101/I-80 INTERCHANGE

FIGURE 21

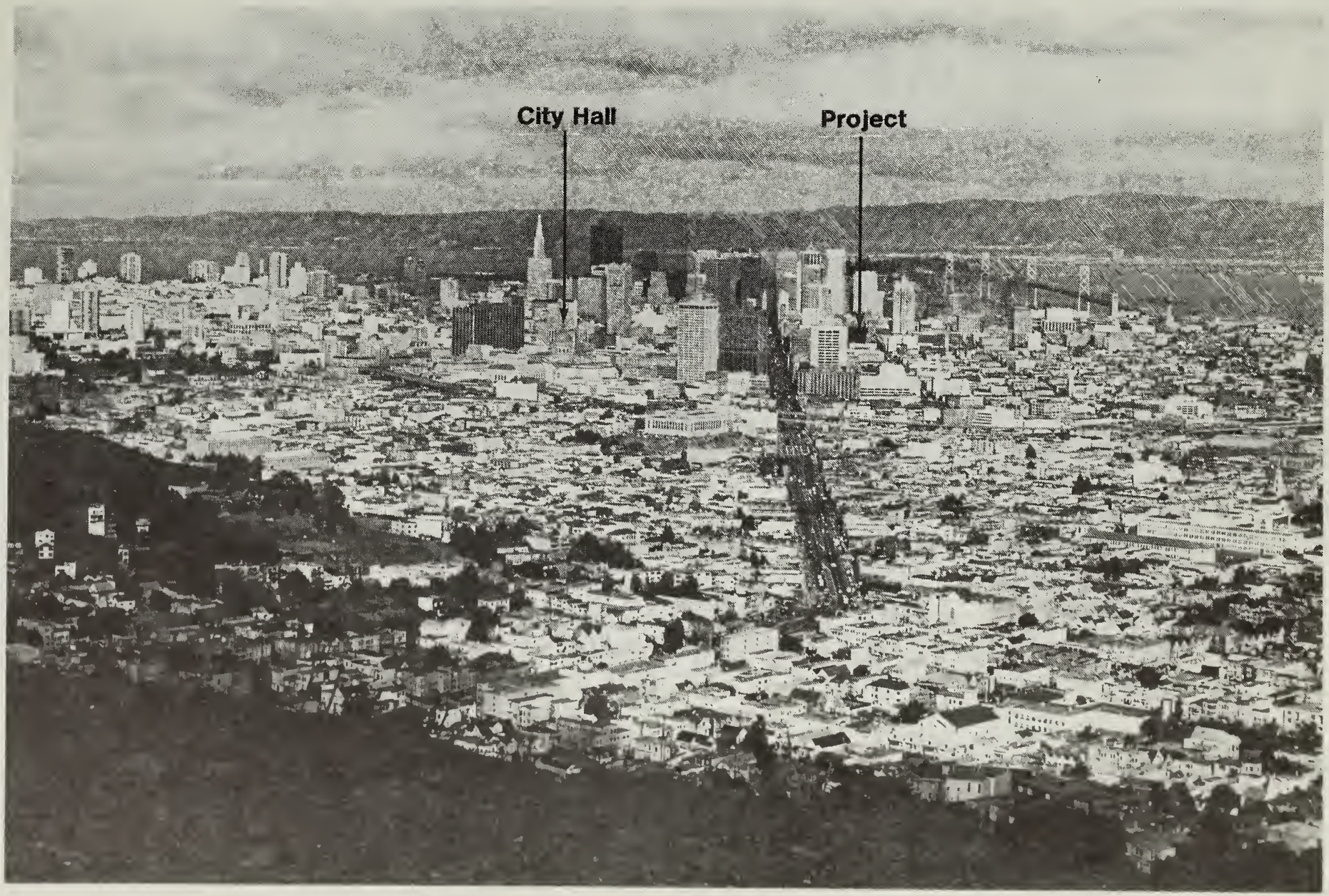
SOURCE SQUARE ONE FILM & VIDEO

85017

PHOTOMONTAGE OF THE PROJECT LOOKING NORTHEAST TOWARD DOWNTOWN FROM TWIN PEAKS

FIGURE 22

SOURCE SQUARE ONE FILM & VIDEO



D. SHADOW AND WIND

1. Shadow

Shadow patterns for existing and proposed buildings in the project area are shown for 10:00 a.m., noon, and 3:00 p.m. for the four seasons: during winter and summer solstices when the sun is at its lowest and highest and during the spring and fall equinoxes when the sun is at its midpoint. (See Figures 23 through 27-C, pages 89 through 97.) The analysis includes shadows cast on streets, sidewalks, pedestrian areas, and open space in the area potentially affected by the proposed project. A shadow outline of the proposed project as though cast on a flat plane is shown in the Shadow Fan Diagram (see Figure 28, page 98), to illustrate the scale of the project in relation to the structures that would surround it. Shadows that would be cast on building rooftops are not shown. The diagrams show existing and proposed building shadows illustrating additional shadow due to the project.

March 21 (PST)

At 10:00 a.m. on March 21 (see Figure 23), the project would add shadows along Market Street and its northern sidewalk opposite the project site.

At 12:00 noon on March 21 (see Figure 23), the proposed building would shade a section of Market Street north of the project site. Shadows would not reach the northern sidewalk of Market Street opposite and to the northeast of the project site.

At 3:00 p.m. on March (see Figure 23), the project would add to existing shadows on Mission Street immediately east of the project site. Project shadows would also fall on rooftops to the east of the project site.

June 21 (PDT)

At 10:00 a.m. on June 21 (see Figure 24), the project would add shadows along Market Street to the west and north of the project site. New shadows would also be added to a portion of the intersection of Eighth and Market Streets. A portion of Eighth Street and its eastern sidewalk adjacent to the proposed building would be shaded.

SHADOW PATTERNS: MARCH 21, PST

FIGURE 23

SOURCE: EIP ASSOCIATES

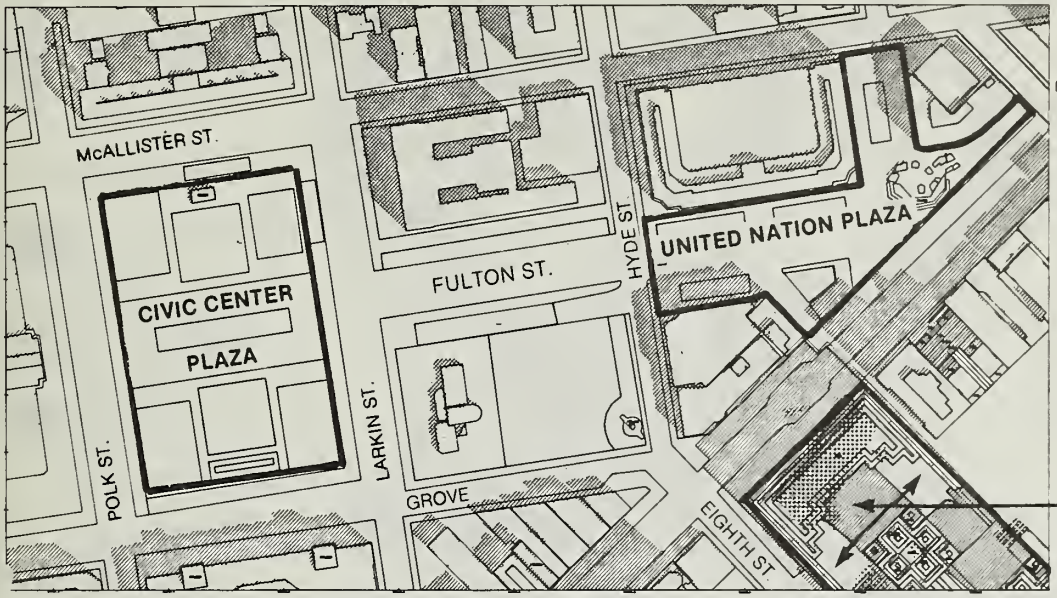
FEET 0 125 250 500

PROJECT SITE BOUNDARY

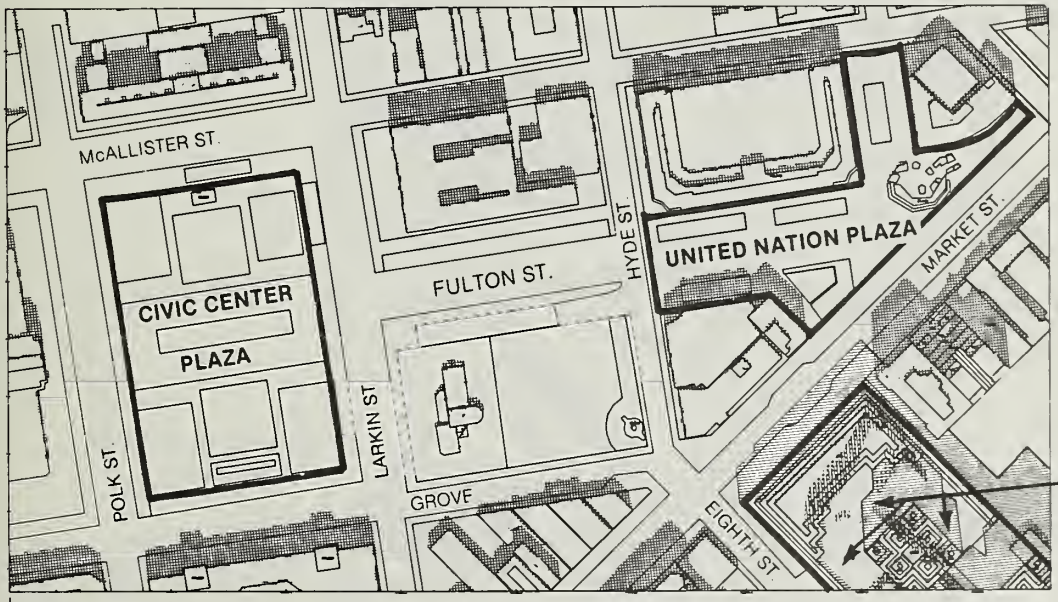
SHADOWS FROM EXISTING BUILDINGS

NEW SHADOWS FROM PROPOSED PROJECT

SHADOWS FROM EXISTING BUILDING TO BE REMOVED

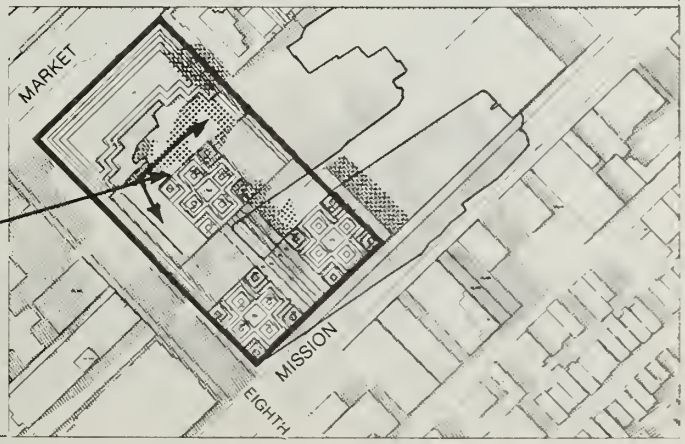


10 A.M.



12 Noon

NOTE: NO PROJECT SHADOWS NORTH OF MARKET STREET AT 3 PM



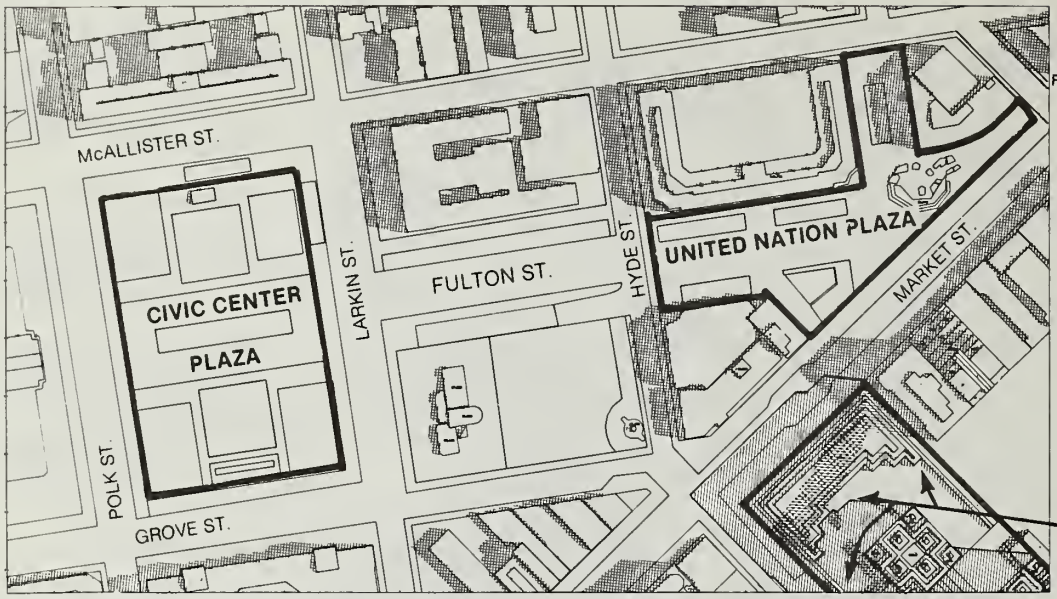
3 P.M.

85017

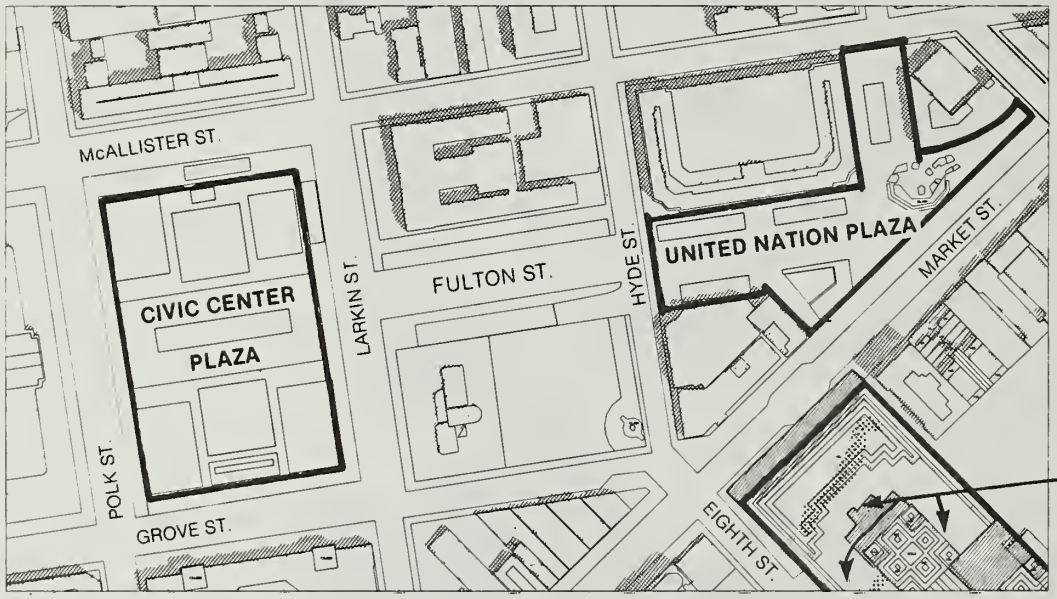
SHADOW PATTERNS: JUNE 21, PDT

FIGURE 24

SOURCE: EIP ASSOCIATES

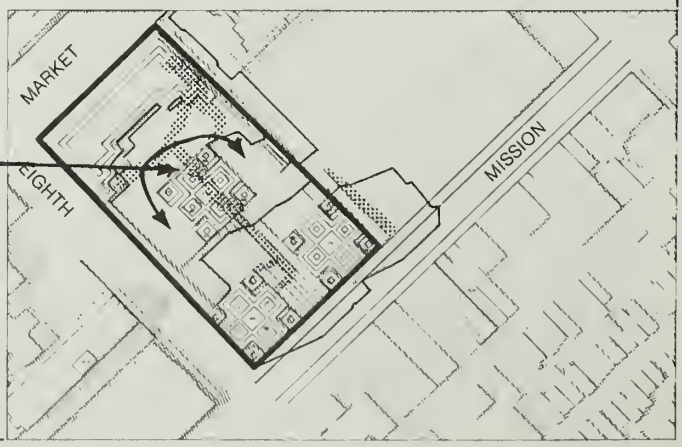


10 A.M.

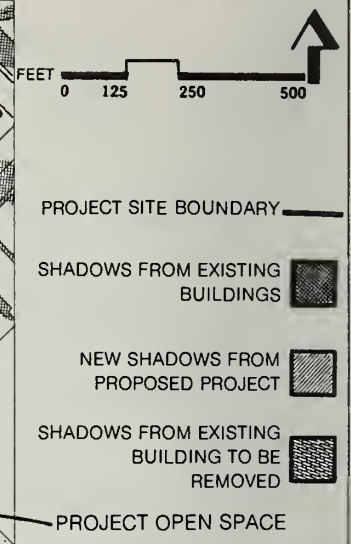


12 Noon

NOTE: NO PROJECT SHADOWS NORTH OF MARKET STREET AT 3 PM



3 P.M.



SHADOW PATTERNS: SEPTEMBER 21, PDT

FIGURE 25

SOURCE: EIP ASSOCIATES

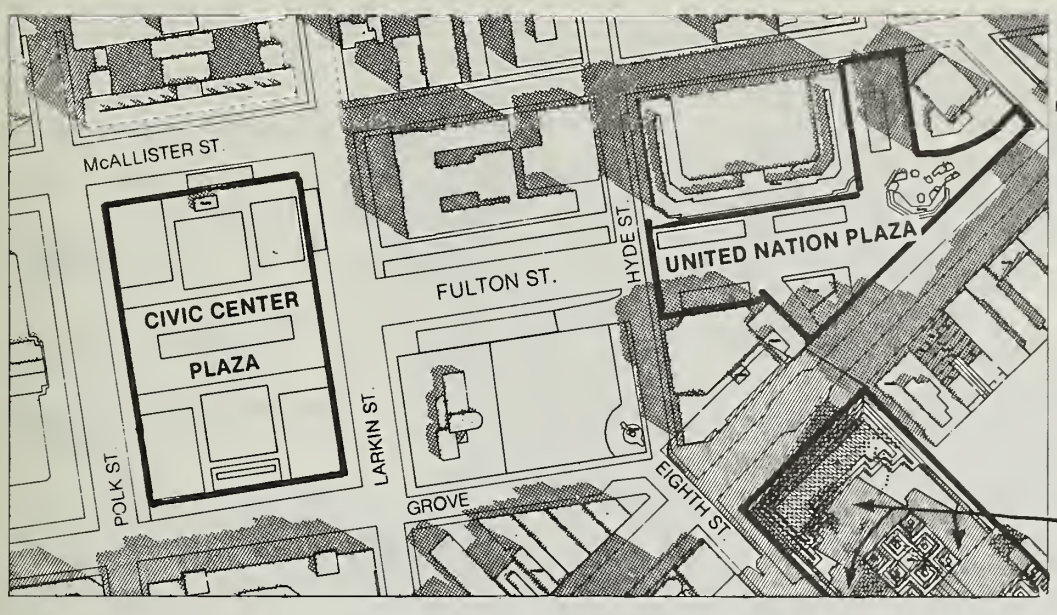
FEET 0 125 250 500

PROJECT SITE BOUNDARY

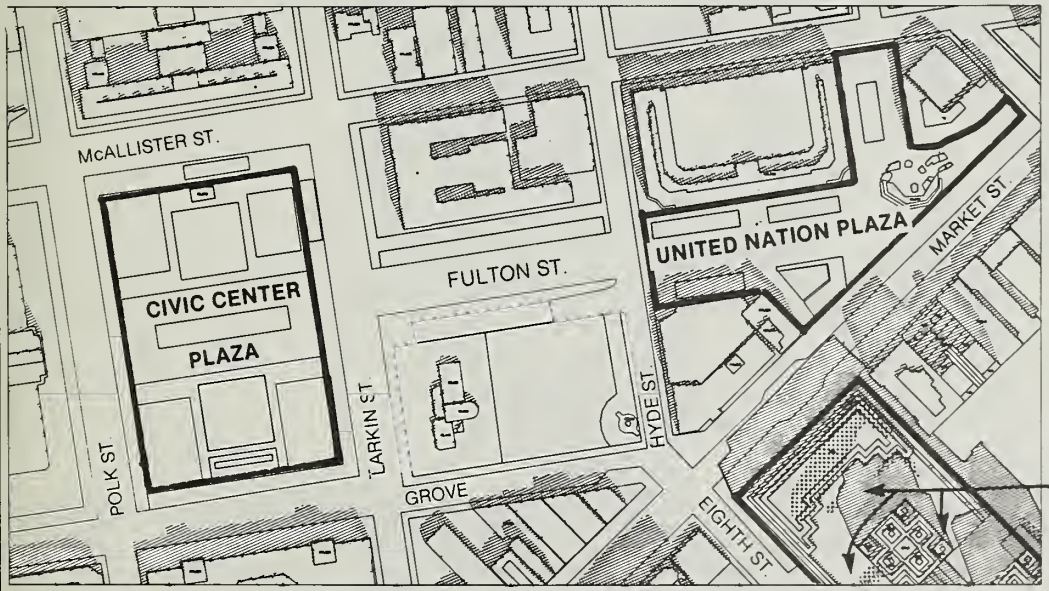
SHADOWS FROM EXISTING BUILDINGS

NEW SHADOWS FROM PROPOSED PROJECT

SHADOWS FROM EXISTING BUILDING TO BE REMOVED

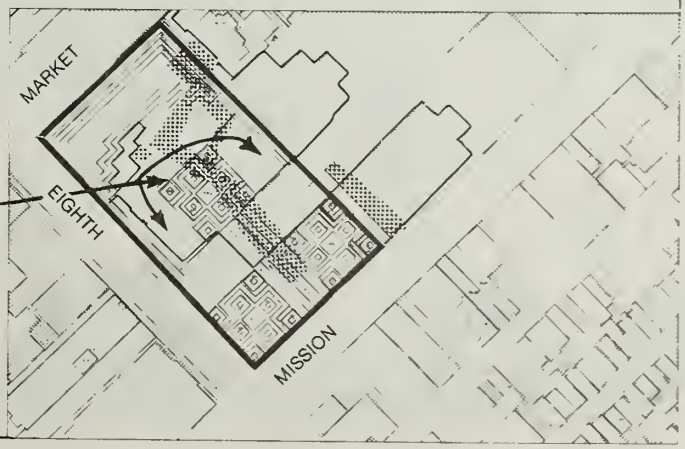


10 A.M.



12 Noon

NOTE: NO PROJECT SHADOWS NORTH OF MARKET STREET AT 3 PM

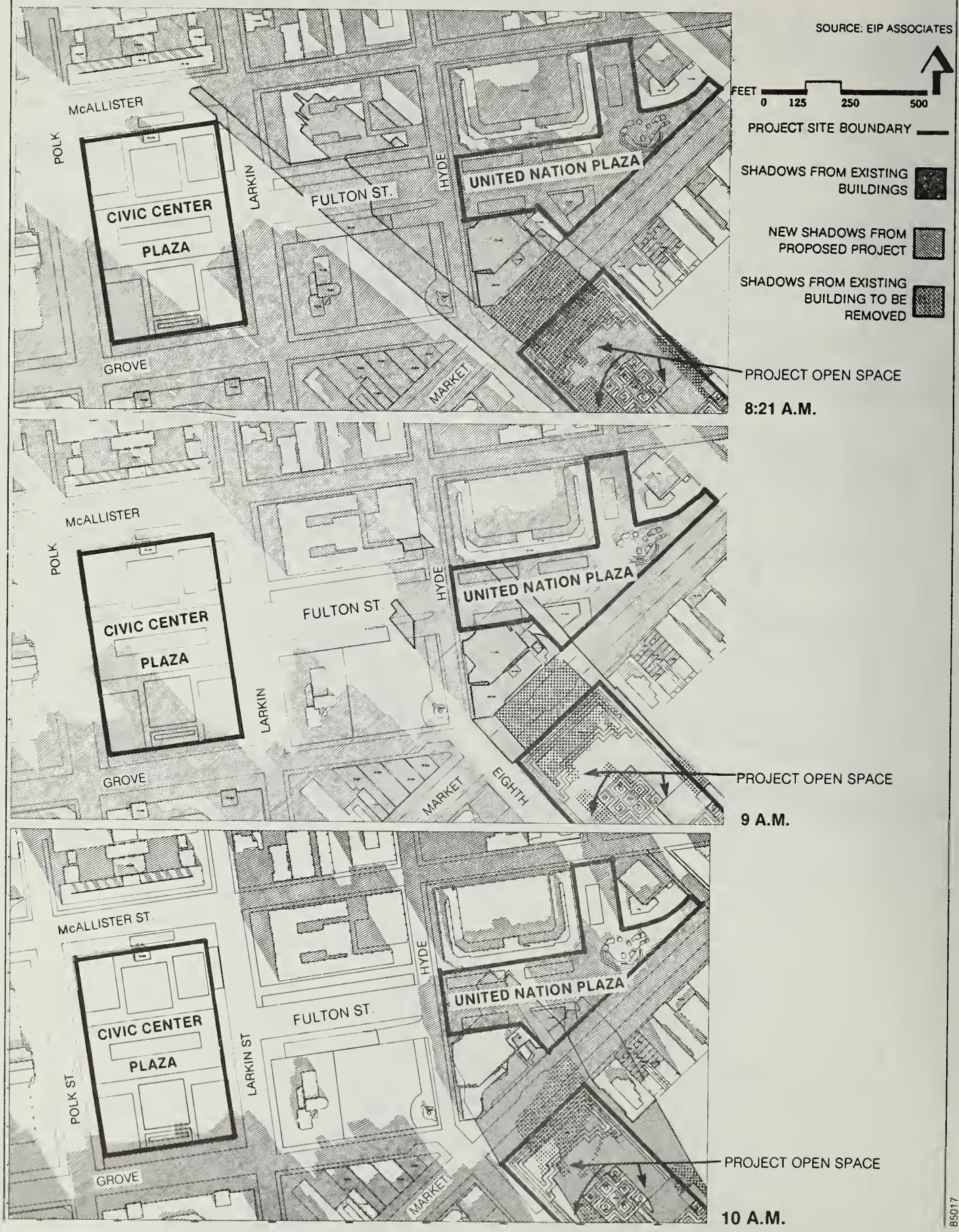


3 P.M.

85017

SHADOW PATTERNS: DECEMBER 21, PST

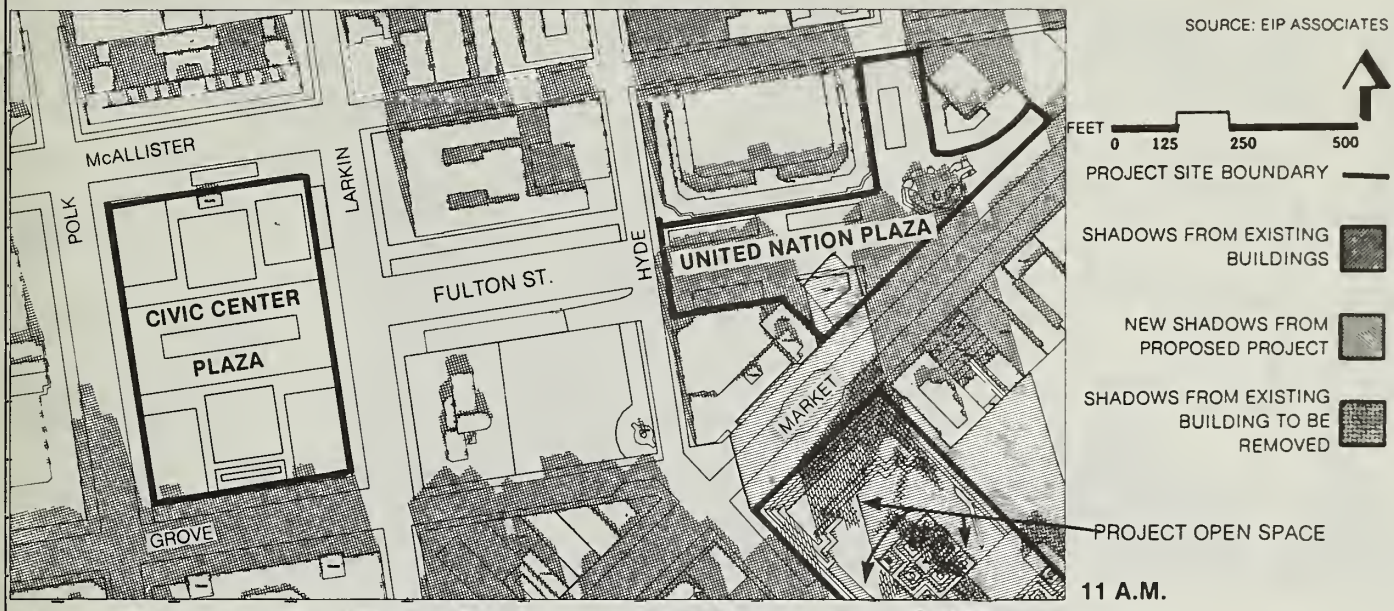
FIGURE 26-A



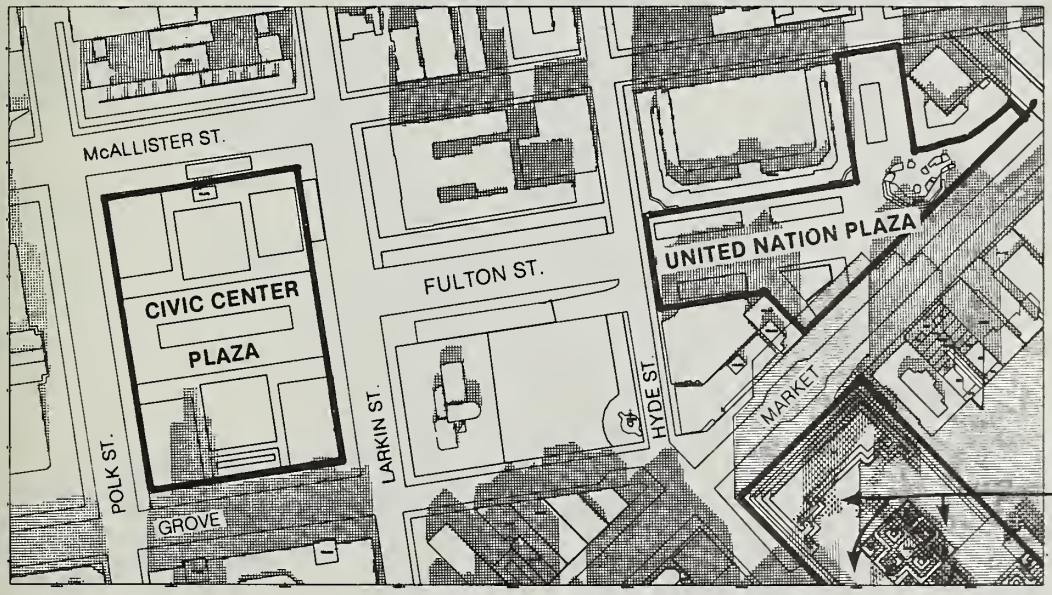
85017

SHADOW PATTERNS: DECEMBER 21, PST

FIGURE 26-B



11 A.M.



12 Noon

SOURCE: EIP ASSOCIATES

FEET 0 125 250 500

PROJECT SITE BOUNDARY

SHADOWS FROM EXISTING BUILDINGS

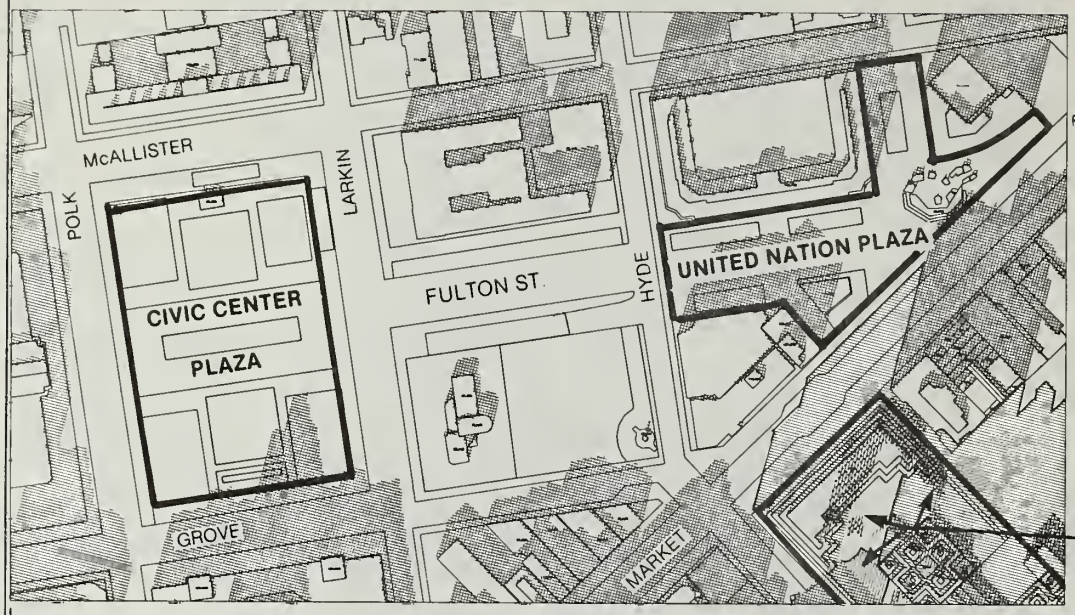
NEW SHADOWS FROM PROPOSED PROJECT

SHADOWS FROM EXISTING BUILDING TO BE REMOVED

85017

SHADOW PATTERNS: DECEMBER 21, PST

FIGURE 26-C



SOURCE: EIP ASSOCIATES

FEET 0 125 250 500

PROJECT SITE BOUNDARY

SHADOWS FROM EXISTING BUILDINGS

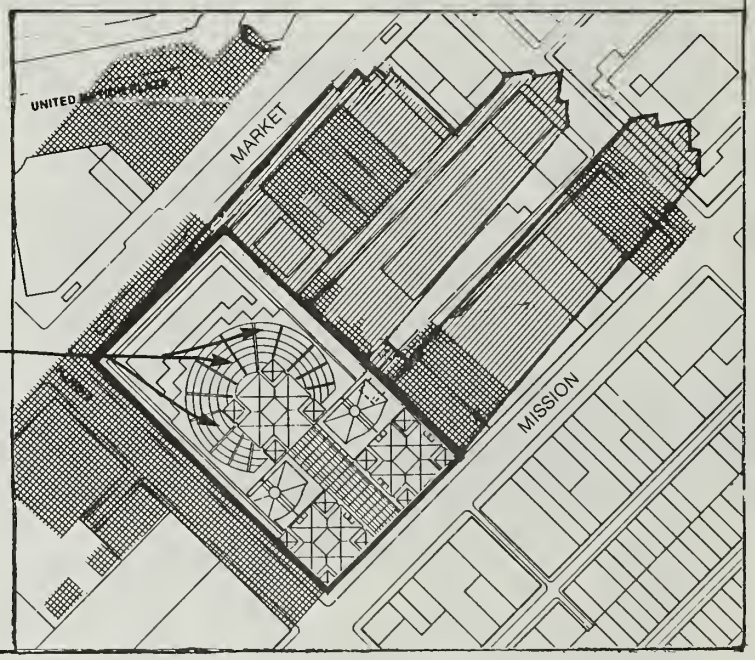
NEW SHADOWS FROM PROPOSED PROJECT

SHADOWS FROM EXISTING BUILDING TO BE REMOVED

PROJECT OPEN SPACE

1 P.M.

NOTE: NO PROJECT SHADOWS NORTH OF MARKET STREET AT 3 PM

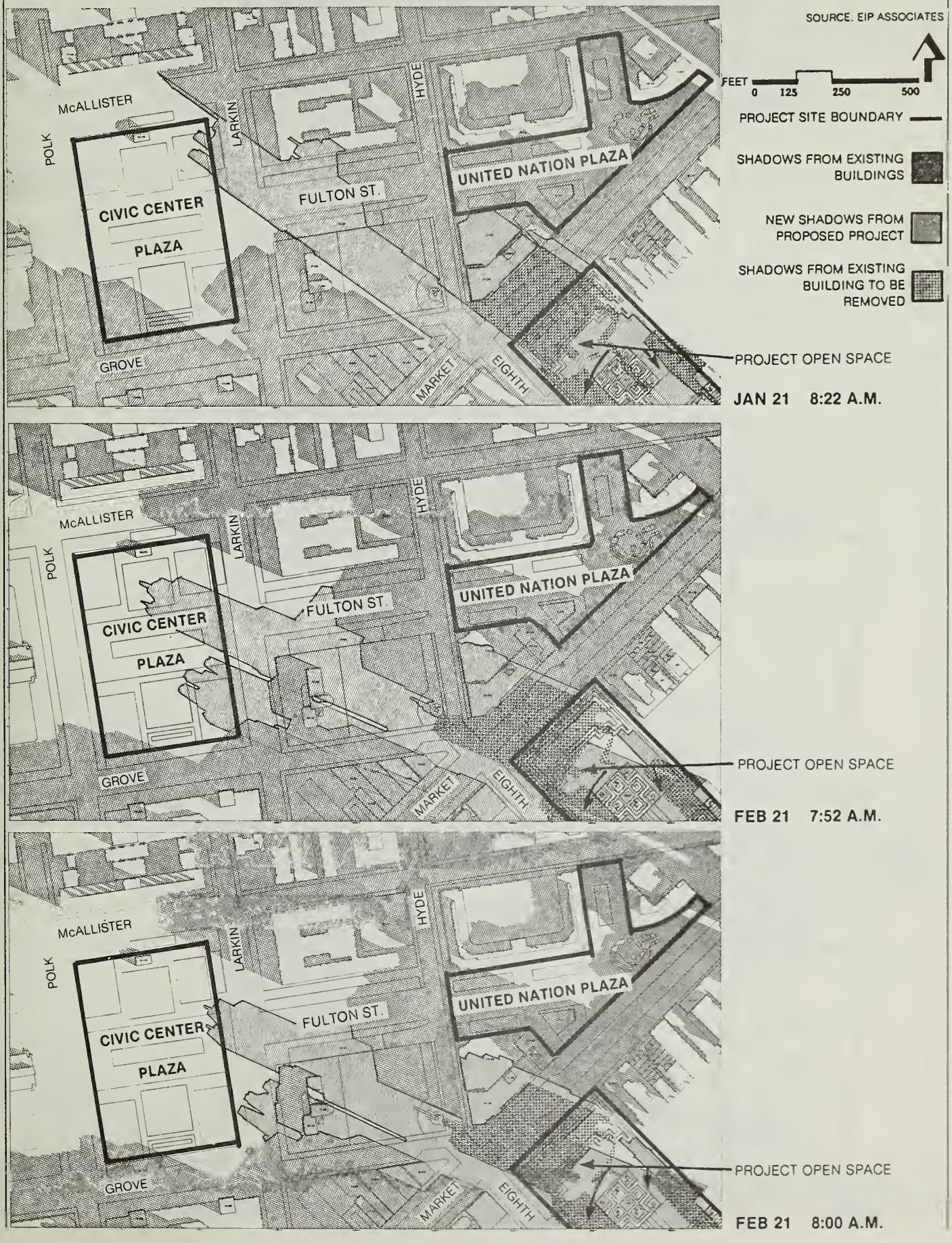


PROJECT OPEN SPACE

3 P.M.

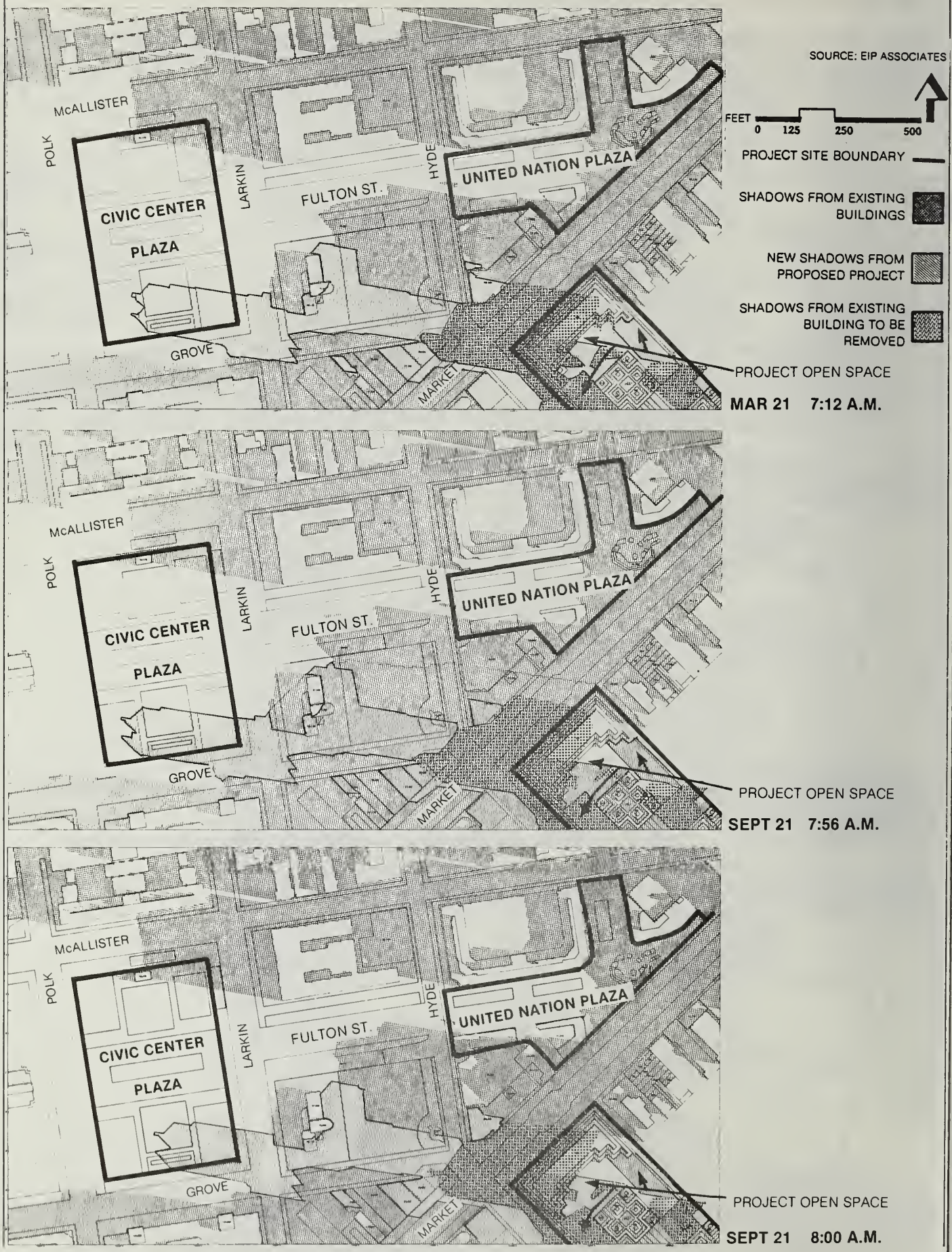
SHADOW PATTERNS: 1st HOUR AFTER SUNRISE

FIGURE 27-A



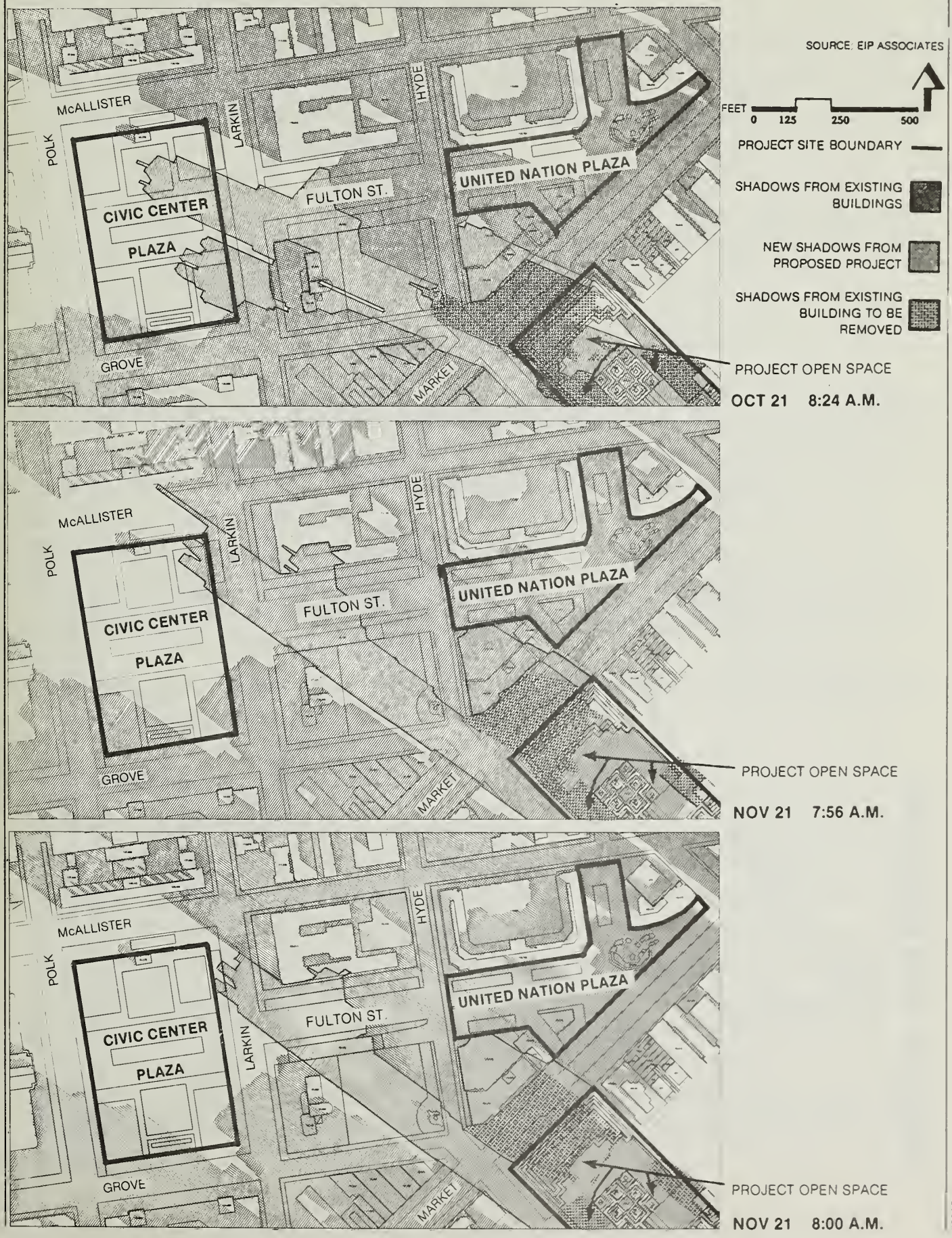
SHADOW PATTERNS: 1st HOUR AFTER SUNRISE

FIGURE 27-B



SHADOW PATTERNS: 1st HOUR AFTER SUNRISE

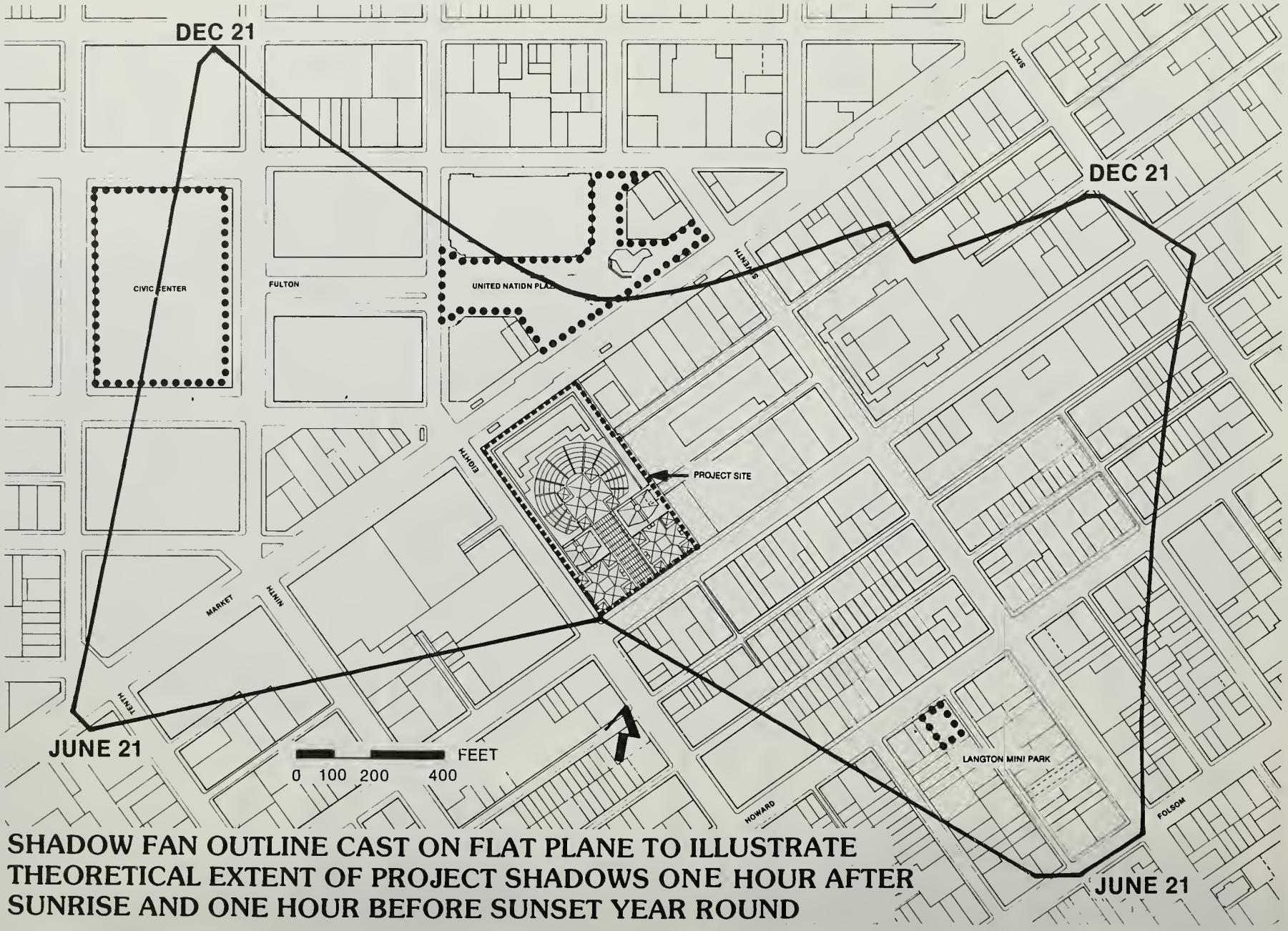
FIGURE 27-C



SHADOW FAN DIAGRAM

FIGURE 28

SOURCE: EIP CORPORATION



SHADOW FAN OUTLINE CAST ON FLAT PLANE TO ILLUSTRATE THEORETICAL EXTENT OF PROJECT SHADOWS ONE HOUR AFTER SUNRISE AND ONE HOUR BEFORE SUNSET YEAR ROUND

85017

At 12:00 noon on June 21 (see Figure 24), the proposed building would shade a section of Market Street north of the project site in that shadows would be added to the southern sidewalk of Market Street adjacent to the project site. Shadows would not reach across the Market Street roadway at this time.

At 3:00 p.m. on June 21 (see Figure 24), the project would add to existing shadows on Mission Street east of the project site. Project shadows would fall on existing rooftops east of this project site at this time.

September 21 (PDT)

At 10:00 a.m. on September 21 (see Figure 25), the project would add shadows along Market Street to the north and northwest of the project site. The eastern sidewalk of Eighth Street would be covered by new shadow at this time. Shadows would be added to an area on the north side of the intersection of Eighth and Market Streets.

At 12:00 noon on September 21 (see Figure 25), the proposed building would shade a section of Market Street north of the project site. Shadows would not reach the northern sidewalk of Market Street opposite the site and to the northeast of the site at this time.

At 3:00 p.m. on September 21 (see Figure 25), the project shadows would fall on rooftops east of the project site.

December 21 (PST)

At 8:21 a.m. on December 21 (see Figure 26-A), one hour after sunrise, the project would add shadows to a portion of Civic Center Plaza covering about 996 square feet (about 0.4%) at the intersection of McAllister and Hyde. Existing shadows would cover about 19% of the Plaza at this time. Therefore the cumulative total for shadow coverage would be 19.4% of the Plaza. Portions of Fulton Street, and of Market Street, at its intersection with Eighth Street, and adjacent sidewalks would also be covered by new shadows at this time. Existing shadows would cover about 60% of United Nations Plaza at this time.

At 9:00 a.m. on December 21 (see Figure 26-A), the project would add new shadows on Market Street and its sidewalks north of the project site. The project would add new

shadows on United Nations Plaza covering about 9,875 square feet (about 8%). Existing shadows would cover about 76% of the Plaza at this time. Therefore the cumulative total for shadow coverage would be 84% of the Plaza. No new shadows would appear on Civic Center Plaza at this time.

At 10:00 a.m. on December 21 (see Figure 26-A) the project would add new shadows on Market Street and its sidewalks north of the project site and on United Nations Plaza covering about 9,750 square feet (about 8%). Existing shadows would cover about 65% of the Plaza at this time. Therefore the cumulative total for shadow coverage would be 73% of the Plaza.

At 11:00 a.m. on December 21 (see Figure 26-B) the project would add new shadows on Market Street and its sidewalks north of the project site and on United Nations Plaza covering about 8,655 square feet (about 7%). Existing shadows would cover about 51% of the Plaza at this time. The cumulative shadow coverage would be 58% of the Plaza.

At 12:00 noon on December 21 (see Figure (26-B) the project would add new shadows on Market Street and its sidewalks north of the project site and on United Nations Plaza covering about 4,267 square feet (about 3.5%). Existing shadows would cover about 38% of the Plaza at this time. The cumulative shadow coverage would be about 41.5% of the Plaza.

At 1:00 p.m. on December 21 (see Figure 26-C) the project would add new shadows on Market Street north of the project site and on its northern sidewalk in front of the United Nations Plaza.

At 3:00 p.m. on December 21 project shadows would fall on rooftops east of the project site.

Shadow on Open Space

Parks and plazas situated along Market Street to the north and northeast of the project site are the nearest public open spaces in the vicinity of the project. These open spaces include Civic Center Plaza, United Nations Plaza and Hallidie Plaza. As illustrated on

Figure 28, page 98, shadow fan analysis, project shadows would not reach Hallidie Plaza at any time of the year. Langton Street Mini Park, to the southeast of the project site, would be included in the shadow fan area.

United Nations Plaza

On March 21, June 21, and September 21 project-generated shadows would not reach the north side of Market Street after 10:00 a.m. in the day. Project shadows would therefore not affect this public open space from March through September during the hours of the day when public open space receives its heaviest use. In December project shadows would reach across Market Street and would add new shadows to public open space from about 8:30 a.m. to about 12:45 p.m. principally affecting the southwest corner of the Plaza. On December 21 maximum new shadow impacts would occur between 9:00 a.m. and 10:00 a.m.. At 9:00 a.m. new shadows would cover about 9,875 square feet (about 8%) of the Plaza. Existing shadows would cover 92,522 square feet (about 76%) of the Plaza at this time. The cumulative total for shadow coverage would be about 84% of the Plaza at 9:00 a.m.

On January 21 new shadows would be added to the Plaza from 8:55 a.m. to about 12:55 a.m. PST. On January 21 maximum new shadow impacts would occur between 10:00 a.m. and 11:00 a.m. At 11:00 a.m. new shadows would cover about 5,200 square feet (about 4.3%) of the Plaza. Existing shadows would cover about 52,539 square feet (about 43.1%) of the Plaza at this time. The cumulative total for shadow coverage would be about 47.4% of the Plaza at 11:00 a.m.

On February 21 new shadows would be added to the Plaza from about 9:50 a.m. to about 11:15 a.m. PST. At 11:00 a.m. new shadows would cover about 488 square feet (about 0.4%) of the Plaza. Existing shadows would cover about 30,231 square feet (about 25%) of the Plaza at this time. The cumulative total for shadow coverage would be about 25.4% of the Plaza at 11:00 a.m. No new shadows would reach the Plaza in the morning hours from approximately mid March to late September.

On October 21 new shadows would reach the Plaza from about 9:50 a.m. to about 11:00 a.m. PDT. At 11:00 a.m. new shadows would cover about 853 square feet (about 0.7%) of

the Plaza. Existing shadows would cover about 37,180 square feet (about 31%) of the Plaza at this time. The cumulative total for shadow coverage would be about 31.7% of the Plaza at 11:00 a.m.

On November 21 new project shadows would reach the Plaza from about 8:45 a.m. to about 12:05 p.m. PST. At 10:00 a.m. new shadows would cover about 5,360 square feet (about 4.4%) of the Plaza. Existing shadow would cover about 65,580 square feet (about 54%) of the Plaza at this time. The cumulative total for shadow coverage would be about 58.4% of the Plaza at 10:00 a.m.

Proposition K

In June, 1984, the voters of the City and County of San Francisco approved Proposition K, the Park Shadow Ban initiative ordinance prohibiting the issuance of building permits for structures that would shade property under the jurisdiction of or designated to be acquired by, the Recreation and Park Commission unless the City Planning Commission determines, based on the recommendation of the General Manager of the Department of Recreation and Parks and the Recreation and Parks Commission, that such shade would have an insignificant adverse impact on the use of such property.

Civic Center Plaza is the closest Proposition K open space in the vicinity of the project site. Shadows generated by the project would fall on the square one hour after sunrise on a number of dates in the year.

Early morning shadows generated by the project would be directed towards Civic Center Plaza from late August through to mid April.

On September 21 project shadows would reach the Plaza at 7:56 a.m. and leave the Plaza at about 8:20 a.m. PDT. At 8:00 a.m. new shadows would cover about 28,074 square feet (about 11%) of the Plaza. Existing shadows would cover about 21,438 square feet (about 8.4%) of the Plaza at this time. Cumulative shadow coverage would be about 19.4% of the Plaza. On October 21 project shadows would reach the Plaza at 8:24 a.m. and leave at about 8:45 a.m. PDT. At 8:24 a.m. new shadows would cover about 26,492 square feet (about 10.4%) of the Plaza. Existing shadows would cover about 18,682 square feet (about

7.3%) of the Plaza at this time. Cumulative shadow coverage would be about 17.7% of the Plaza. On November 21 project shadows would reach the Plaza at 7:56 a.m. and leave at about 8:02 a.m. PST. At 8:00 a.m. new shadows would cover about 1,530 square feet (about 0.6%) of the Plaza. Existing shadows would cover about 51,044 square feet (about 20%) of the Plaza at this time. Cumulative shadow coverage would be about 20.6% of the Plaza. On December 21 project shadows would reach the Plaza at 8:21 a.m. and leave at about 8:27 a.m. PST. At 8:21 a.m. new shadows would cover about 996 square feet (about 0.4%) of the Plaza. Existing shadows would cover about 48,606 square feet (about 19%) of the Plaza at this time. Cumulative shadow coverage would be about 19.4% of the Plaza. At other times of the year the bearing angle of the sun one hour after sunrise would direct project shadows away from the square.

On January 21 project shadows would reach the Plaza at 8:22 a.m. and leave at about 8:27 a.m. PST. At 8:22 a.m. new shadows would cover about 5,334 square feet (about 2.1%) of the Plaza. Existing shadows would cover about 35,399 square feet (about 13.9%) of the Plaza at this time. Total cumulative shadow coverage would be about 16% of the Plaza.

On February 21 project shadows would reach the Plaza at 7:52 a.m. and leave at about 8:06 a.m. PST. At 8:00 a.m. new shadows would cover about 7,146 square feet (about 2.8%) of the Plaza. Existing shadows would cover about 23,225 square feet (about 9.1%) of the Plaza at this time. Total cumulative shadow coverage would be about 11.9% of the Plaza.

On March 21 project shadows would reach the Plaza at 7:12 a.m. and leave at 7:36 a.m. PST. At 7:12 a.m. new shadows would cover about 28,993 square feet (about 11.4%) of the Plaza. Existing shadows would cover about 17,763 square feet (about 7%) of the Plaza at this time. Total cumulative shadow coverage would be about 18.4% of the Plaza.

No new shadows would reach the Plaza from approximately mid April to late August.

Approximately three percent (360 gsf) of Langton Street Mini Park would be shadowed by the project for approximately 20 minutes after 7 p.m. from mid-May to July.

Downtown Plan

The Downtown Plan includes sun access criteria to allow direct sunlight to reach sidewalk areas of designated streets during critical hours of the day. In the case of sidewalks, the critical hours are considered to be the hours around noon.

The Downtown Plan also shows Market Street in the vicinity of the project site as part of an area in which the present scale of development, degree of sky exposure and amount of sunlight reaching the street are to be preserved. The proposed project would cast new shadows on Market Street, (portions of which would continue to be shadowed by existing buildings).

The Downtown Plan (October 1985) indicates sunlight access controls to public sidewalks in the C-3 District. Figure 29, page 105, illustrates streets on the project area affected by these controls.

On March 21 and on September 21 project shadows would not reach across the northern sidewalk of Market Street during the hours around noon. The southern sidewalk of Market Street adjacent to the project would be shaded by the proposed structure year round during the noon time.

On June 21 project shadows would cover the southern sidewalk of Market Street in the hours around noon time.

On December 21 project shadows would reach the northern sidewalk of Market Street at noon and would leave the northern curb line of the northern sidewalk at approximately 1:15 p.m.

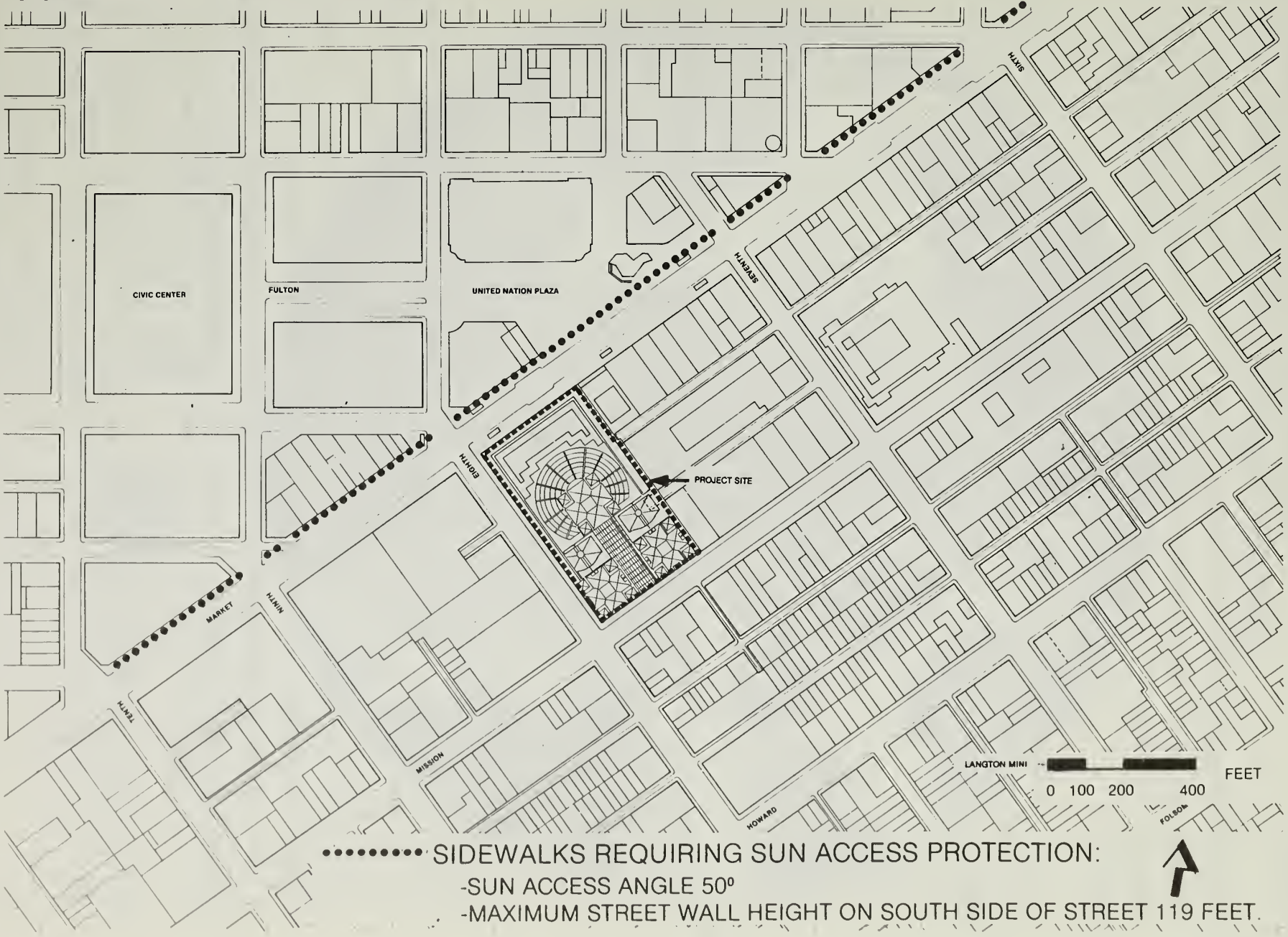
Open Space Proposed as Part of the Project

The area designated as project open space would be at ground floor level and enclosed by the proposed structure on all sides. The space above the project open space would be open to the sky. Project open space is located at the center of the project to the north of the tower portions of the project. Because of the orientation of the South of Market site portions of the project open space would be exposed to available sunlight for most of the year during the hours around noon.

FIGURE 29

SUORCE: EIP CORPORATION

SUN ACCESS DIAGRAM



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On March 21 the proposed project would cast shadows on about 70% of project open space at 10:00 a.m. At 12 noon about 50% of project open space would be covered by project shadows. At 3:00 p.m. about 40% of project open space would be covered by project shadows.

On June 21 project shadows would cover about 70% of the project open space at 10:00 a.m. PDT. By midday on June 21 project shadows would cover about 25% of project open space. At 3:00 p.m. PDT about 25% of project open space would be covered by project shadows.

On September 21 the proposed project would cast shadows on about 80% of project open space at 10:00 a.m. At 12 noon about 40% of project open space would be covered by project shadows. At 3:00 p.m. about 30% of project open space would be covered by project shadows.

On December 21 at 10:00 a.m. the proposed project's shadows would cover about 90% of project open space. At 12 noon about 65% of project open space would be covered by project shadows. At 3:00 p.m. about 70% of project open space would be covered by project shadows.

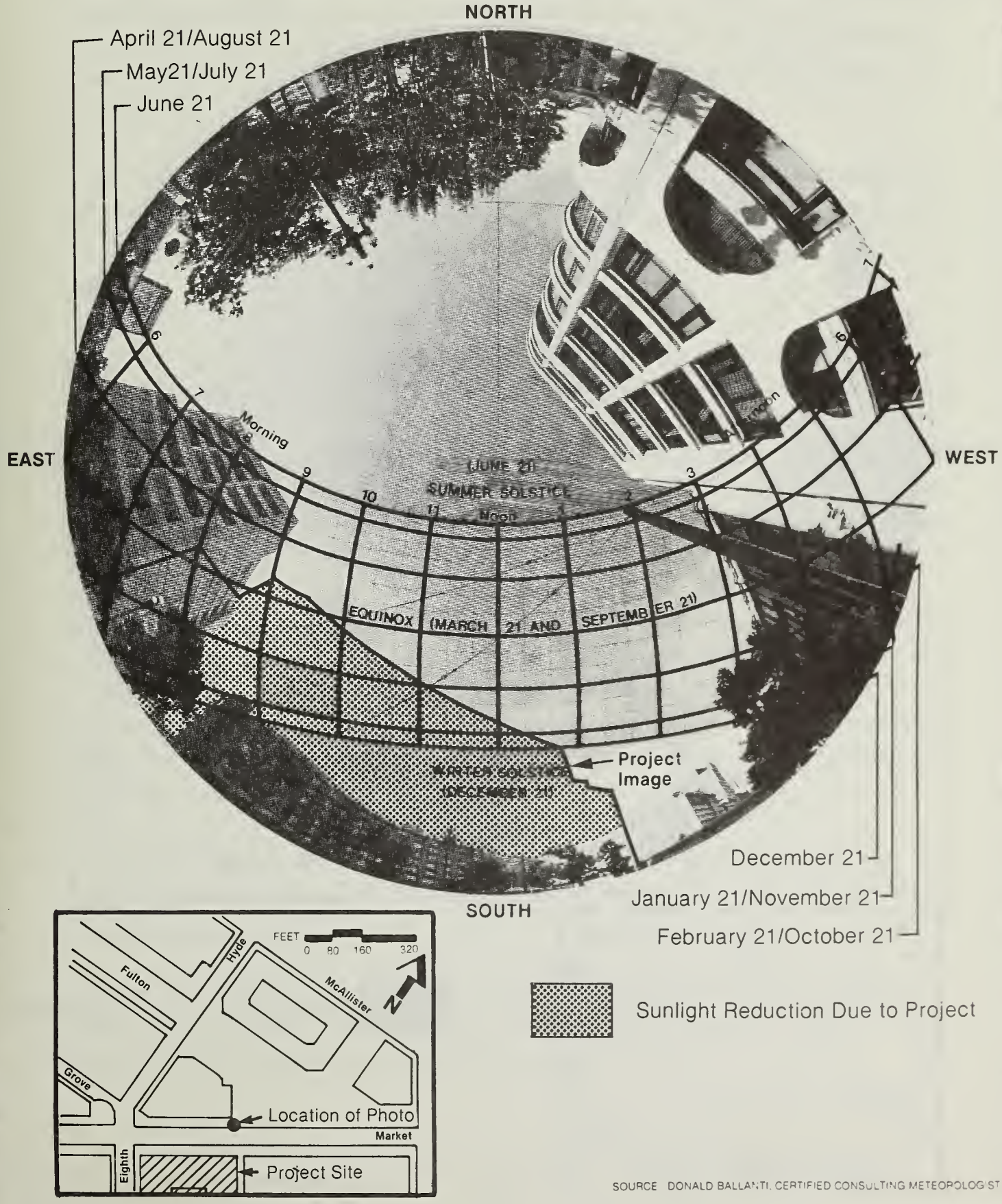
2. Skyplane Exposure

Analyses of sunlight duration were prepared for two locations near the project site (see Figures 30 and 31, page 107 and 108). Diagrams of the sun's yearly path are superimposed on a fish-eye lens photograph of the sky. This technique accurately depicts the times of the year and day that direct sunlight reaches a location, but creates an exaggerated image due to the distortion inherent in using a fish-eye lens. Local solar time, similar to Pacific Standard Time (PST), is used. During the time of year that Pacific Daylight Time (PDT) is in effect, the sun location would be comparable to about one hour earlier than shown on Figures 30 through 31. This technique differs from the shadow pattern analysis, in that it predicts the duration of sunlight at a specific location, not the extent of the shadow.

Figure 30, page 107 shows a skyplane analysis for the Trinity Plaza project from the northside of Market Street near the United Nations Plaza. This location currently

SKYPLANE EXPOSURE NORTH OF PROJECT SITE ACROSS MARKET STREET

FIGURE 30



SOURCE DONALD BALLANTI, CERTIFIED CONSULTING METEOROLOGIST

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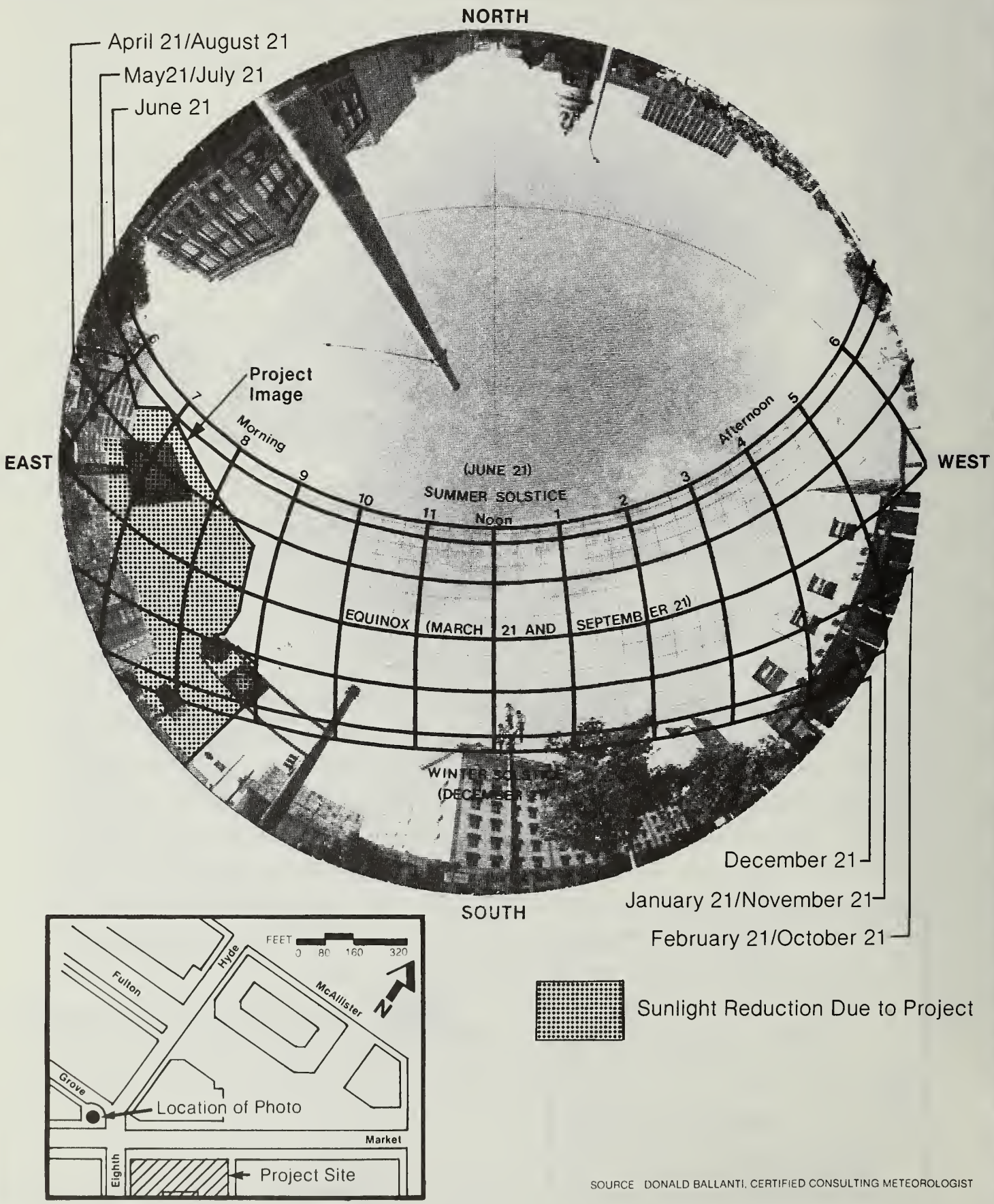
SKYPLANE EXPOSURE FROM NORTHWEST CORNER OF MARKET/HYDE INTERSECTION

FIGURE 31



SOURCE DONALD BALLANTI, CERTIFIED CONSULTING METEOROLOGIST

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receives sunlight from about 9 a.m. to 3 p.m. all year. The proposed project would not affect direct sunlight to this site in Spring and Summer, but would eliminate direct sunlight from one to three hours in Fall and Winter mornings. It would allow access of direct sunlight to this location at noon during all seasons except from about November 21 to January 21.

At the Market/Hyde Street intersection (see Figure 31, page 108), sunlight duration would be reduced in all seasons. In all seasons, sunlight would be reduced by up to two hours in the morning (from about 7 a.m. to 9 a.m.).

3. Wind

Prevailing winds in San Francisco are from the northwest, west-northwest, west and west-southwest. Wind tunnel measurements were made at 27 surface locations near or within the project site for each of the prevailing wind directions using a scale model of the site, the project and vicinity. The study included separate tests of northwest, west-northwest, west and west-southwest winds under existing conditions and future conditions with the proposed project, Alternative 2 (6:1 FAR), and Alternative 4 (No Shadow on Public Open Space).

Wind test data were combined with wind records to predict the wind speeds that would be exceeded 10% of the time at each test location. The predicted winds were then compared to the comfort and hazard criteria in the City Planning Code, established in the Downtown Plan. (See Appendix E, p. A-37 for a summary of the full wind analysis.) Throughout the following discussion, the wind speeds reported refer to the equivalent wind speeds that would be exceed 10% of the time.[2]

Existing wind speeds are four to 15 mph at the 21 sidewalk locations tested. (See Appendix E, Figure E-1, p. A-39, for a figure showing the locations of, and wind speeds at, the test points.)

Existing winds meet the 11 mph comfort criterion at 17 of the 21 sidewalk locations. In addition, the pedestrian comfort criterion is exceeded at four locations near the Market and Eighth Street intersection and within U.N. Plaza.

The project would cause wind speeds to increase at nine of the 21 sidewalk test locations, to remain the same at one location, and to decrease at 12 locations. Winds within sidewalk areas would meet the 11 mph comfort criterion for pedestrian areas at 17 of the 21 sidewalk measurement locations. The seven mph comfort criterion for sitting areas would be met at six of seven measurement points within the central Plaza. Of the four locations currently exceeding the 11 mph criterion, one (location 9, in Figure E-1) would experience a reduction of winds to below the 11 mph criterion. One location currently meeting the 11 mph criterion would have winds increased to 12 mph (location 23, in Figure E-1). One location where existing winds exceed the 11 mph criterion would have winds increased by one mph (location 22), and three (locations 4, 9 and 10) would experience a wind reduction of one to four mph but would still remain above the 11 mph criterion.

The impacts of Alternatives 2 and 4 would be similar to that of the proposed project. All locations exceeding the pedestrian comfort criterion with the project would also exceed the criterion with these alternatives (see Figure E-1, page A-39).

The pedestrian hazard criterion (hourly averaged winds of 26 mph or greater no more than one hour per year) would not be exceeded at any measurement location for all alternatives.

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[1]This section is based on a study entitled "Wind Tunnel Analysis for the Proposed Trinity Plaza Project", July, 1986, prepared by Don Ballanti, Certified Consulting Meteorologist. A summary of the report in included in Appendix E, p. A-37; the complete report is on file and available for public review at the Department of City Planning, Office of Environmental Review, 450 McAllister St., Sixth Floor.

[2]Equivalent windspeed is an hourly wind speed adjusted to incorporate the effects of gustiness or turbulence on pedestrians.

E. TRANSPORTATION, CIRCULATION AND PARKING

SITE SPECIFIC ANALYSIS

1. Project Travel Demand

On the basis of land use, the project would generate about 24,800 net new person trip-ends (pte) per day.[1,2] Travel generated by existing office, retail and residential uses on the project site has been subtracted from the total new travel from the site to give the net new travel from the project. (Table 7, page 112, shows calculations for project trip generation.) The trip generation calculations include travel to and from the project site by both visitors, employees and residents of the project. Additionally, although expressed on a person trip-end basis, the trip generation includes all travel to and from the project in autos, service vehicles and trucks, on public transit and other modes (i.e. walking, bicycles, taxis, etc.). Projected outbound (peak commute direction) p.m. peak-period and peak-hour trips by mode expected to be generated by the project are shown in Table 8, page 113. About 1,849 new outbound trips from the project would occur in the p.m. peak-period, of which about 1,085 would occur in the p.m. peak-hour.

Modal assignments for office and retail have been made on the basis of modal splits for the years 1984 and 2000 as contained in the EIR for The Downtown Plan (EE81.3).[3] Modal splits for the residential componant are based on 1980 Census data (Journey to Work Tables). The future modal splits have been applied to the project travel for the purpose of comparing project travel with future travel demand on the transportation system serving San Francisco. The modal splits used were derived from aggregate data for the C-3 District, the zoning district that contains the project site, and thus represent an average condition. The actual modal split for travel from the project may vary from the C-3 District average. However, because the travel demand forecasts used to derive the average modal split data include the travel from the project, application of the average modal split data to project travel appears to be sufficiently accurate for purposes of comparison. Although the project would not be completed in 1984, the 1984 modal split has been used for the purpose of identifying impacts at the single project level (as opposed to impacts at the cumulative level). The year 2000 modal splits have been applied to the project travel for the purpose of comparing project travel with cumulative future travel demand on the transportation system serving San Francisco. (See Regional Cumulative Impacts, page 135).

TABLE 7

NET NEW PROJECT PERSON TRIP GENERATION

Land Use (net new)	Daily Trip Rate	Daily Trips	Peak Period Trips (1 hr/2hr) Total	Peak Period Trips (1 hr/2hr) Outbound
49,600 gross sq ft office area	18.1/1,000[1,2]	898	92/148	88/141
122,050 gross sq ft retail area	95/1,000[2,3]	11,595	1,159/1,913	603/995
*1,641 Residential Units	7.5/unit[4]	*12,308	*1,292/2,338	*394/713
	NET TOTALS	24,800	2,544/4,400	1,085/1,849

898 daily office trips	= 359 work trips[5]	+ 539 non-work trips
11,595 daily retail trips	= 464 work trips[5]	+ 11,131 non-work trips
*12,308 daily residential trips	= *4,308 work trips[6]	+ *8,000 non-work trips
TOTALS	5,131 work trips	19,669 non-work trips

[1] San Francisco Department of City Planning, Guidelines for Environmental Review, September 1983.

[2] Caltrans, Eleventh Progress Report on Trip Ends Generation, pages 167, 168, 171 and 174, July 1976.

[3] Institute of Transportation Engineers, Trip Generation, 1979, not paginated.

[4] ITE, Trip Generation, 1979.

[5] Based upon one retail employee per 350 gross square feet and one office employee per 275 gross square feet as outlined in the City's Guidelines.

[6] Background documents for the Downtown Plan.

TABLE 8

DISTRIBUTION OF NET NEW PROJECT PERSON TRIPS
OUTBOUND DURING PM PEAK-PERIOD[1]

	Peak-Hour (4:30-5:30)		Peak-Period (4:00-6:00)	
Location and Mode	1984	2000	1984	2000
San Francisco				
Drive Alone	78	73	131	130
Carpool	24	24	42	42
Vanpool	--	--	1	1
Muni NE	114	116	202	202
Muni NW	31	33	54	55
Muni SW	25	26	45	46
Muni SE	23	24	41	41
BART	20	20	34	34
Walk	635	635	1,083	1,083
Other	8	8	20	20
Total	958	958	1,654	1,654
East Bay				
Drive Alone	14	10	21	18
Carpool	7	6	8	7
Vanpool	2	2	3	2
BART	37	42	60	67
AC	8	6	13	11
Other	--	--	--	--
Total	68	68	106	106
Peninsula				
Drive Alone	7	5	11	11
Carpool	7	7	9	9
Vanpool	--	--	--	--
MUNI	--	--	1	1
BART	8	8	11	12
Samtrans	2	2	3	4
Caltrain	11	13	18	18
Other	--	--	--	--
Total	36	36	55	55
North Bay				
Drive Alone	10	7	16	15
Carpool	2	2	2	2
Vanpool	--	--	--	--
GGT Bus	9	11	14	14
GGT Ferry	1	1	1	2
Other	1	1	1	1
Total	23	23	34	34
TOTAL	1,085	1,085	1,849	1,849

[1]Numbers may not total due to rounding.

Source: Department of City Planning, Office of Environmental Review (OER), EIR for the Downtown Plan, EE81.3, certified October 18, 1984 on file at OER, and 1980 Census Data -- Journey to Work Tables.

2. Master Plan Policies

The project would relate to several objectives and policies of the Transportation Element of the San Francisco Master Plan.[4] The project would respond to Objective 1, Policy 7, to "seek means to reduce peak travel demand."

Peaking of travel demands during "rush hours" results not only in congested traveling conditions in the morning and evening periods, but in public costs as well, since it is peak demand that the transportation system is designed to accommodate. Therefore, by spreading work trip arrival and departure times over a longer period the capacity of the system can be used more efficiently. For the city's transit system this means less crowding, shorter loading times, increased reliability of service and ultimately lower operating and capital costs. For the streets and highway system it means less congestion, less automobile emissions and a diminshed necessity for high capacity freeways. Administrative devices such as staggering work hours, encouraging shoppers and visitors not to travel during peak hours, altering school hours, and implementing differential bridge tolls would spread the demand over a longer period of time and permit more efficient use of the transportation system.

3. Transit

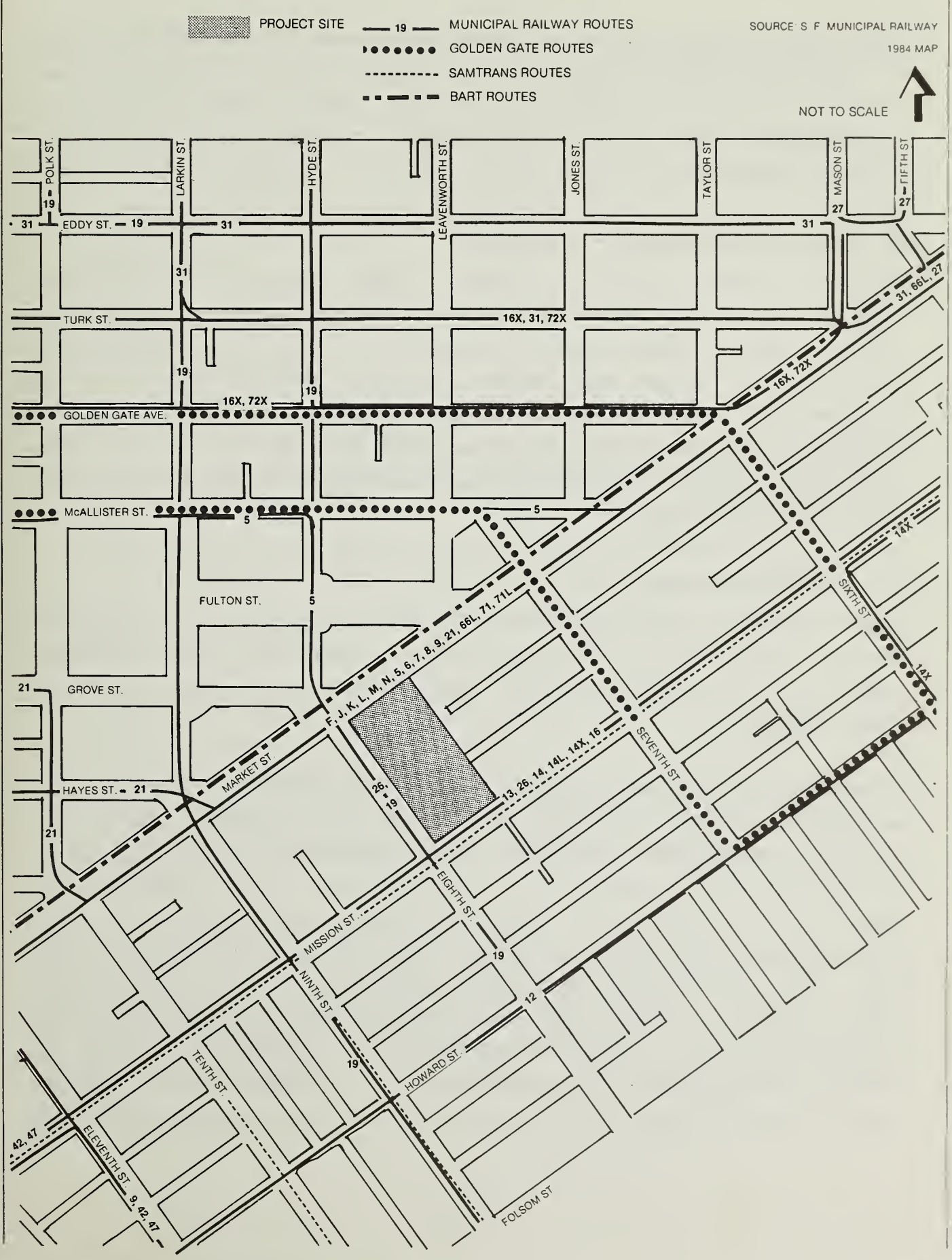
a. Local Transit

The location of the project site on Market Street at Eighth close to the City Center Transit Stop provides access to at least 23 Muni routes within two blocks of the project. Muni Metro and BART service in the Market Street subway are accessible via the Civic Center station. Photographic examples of p.m. peak-hour loadings on Muni vehicles are shown in Appendix B. Figure 32, page 115, shows Muni lines in the project vicinity.

As shown in Table 8, page 113, Muni operations in the four corridors of San Francisco are currently in Level of Service D and E and BART is shown to be operating currently at Level of Service F Eastbay and in Level of Service D in the Westbay. Table B-1, Appendix B, p. A-23, contains descriptions of the various Levels of Service for bus transit. In the p.m. peak-hour, the project would generate about 195 new Muni trips and about 65 new BART trips outbound from the project site. Addition of the project p.m. peak-hour

TRANSIT SYSTEM

FIGURE 32



Muni riders to the existing (1984) Muni ridership would increase the loading ratios on Muni in the northeast corridor to 1.18 but would not change the Level of Service. Southwest, southeast and northwest corridors would not change. Addition of BART riders from the project to the existing BART ridership would not increase the p.m. peak-hour Eastbay or Westbay loading ratios.

b. Transit Corridor Analysis

The project would contribute to increases in transit ridership in the major transit corridors leading from downtown San Francisco. Existing peak-period and peak-hour transit ridership (see Table 8) would be increased by 0.1% to 1.3%, with the greatest increases from the project riders occurring in the Muni northeast corridor. Ridership increases of this magnitude would not be measurable against the day-to-day fluctuations in transit ridership and would not have a noticeable effect on transit levels of service. Transit impact caused by cumulative development are discussed in the Regional Cumulative Impacts section, page 135.

c. Project Transit Costs

Muni. The sponsor would be required to pay a one-time Transit Impact Fee to finance the increased cost of Muni services necessitated by the project, at the rate of $5 per gross square foot of net new office construction. Based on the $5 rate, the project would yield about $248,000.[5]

Cost increases due to increased patronage would be expected for Muni, SamTrans, BART and Golden Gate Transit. The City's general fund provides for a subsidy to the Municipal Railway's operating budget. The subsidy covers the difference between Muni's costs and the revenues that Muni receives from fares and from federal and state governments and represents the cost of Muni to the City. This subsidy amounted to about 10% of total General Fund revenues in the 1984-85 budget. The net marginal cost (or increase in the deficit for Muni operations) per peak-hour ride was $0.50 in 1984. The proposed project would generate about 684 peak-period outbound trips which could generate an annual cost to Muni of approximately $86,184.[6] The extent to which this marginal cost increase cost would be met by the general fund allocation to Muni is not known. However, it appears that the increase in general fund allocations generated by the proposed project would

offset a portion of the peak-period marginal costs to Muni. State and federal funds to Muni are decreasing and the City is reviewing other options for increased revenues.

BART. It is estimated that about 680 daily trips on BART would be generated by the proposed project employees. The deficit per rider for BART is estimated at $1.06. Using this rate, the proposed project would generate a deficit of about $182,175.[7] However, additional property tax and sales tax revenues generated by the project for BART would reduce this deficit.

4. Traffic

a. Local Traffic Analysis

Local traffic impacts have been assessed for the intersections of Eighth/Market and Eighth/Mission. Eighth/Market currently operates at level of service C and Eighth/Mission is operating at level of service C/D with some back ups adjacent to the project site.

The proposed project generates about 200 p.m. peak period outbound trips and 125 p.m. peak-hour outbound trips. Traffic impacts were evaluated for the project's worst case situation, which would be full build out, particularly since the parking garage is constructed in the second phase.

The project would have an entrance and exit on Eighth Street and an exit on Mission. Because Eighth Street is one-way southbound, all project traffic inbound to the site would pass through the Market/Eighth intersection and outbound traffic would pass through the Mission/Eighth intersection. The Market/Eighth intersection is operating in the middle of the C Level of Service range and the addition of project inbound traffic would not degrade service there.

The majority of vehicles exiting the project would exit through Mission/Eighth increasing traffic there. If 75% of peak-hour vehicles leaving the site passed through Mission/Eighth, traffic volumes there would increase by about 3%. An increase of 3% is not detectable within the normal daily fluctuations in traffic, but because Mission/Eighth operates at C/D, the addition of project traffic could cause a degradation of service from C/D to D.

b. Freeway On-Ramp Analysis

Traffic operations at the intersections serving freeway on-ramps near the project site (Eighth/Bryant, Fifth/Bryant, Sixth/Brannan) are shown in Table 9, page 119. During the peak-hour, the intersections of Eighth/Bryant and Fifth/Bryant operate at level of service B/C but are frequently affected by freeway congestion on the Skyway which sometimes backs onto the surface streets during the p.m. peak-hour. During these periods both intersections have operating characteristics similar to E/F conditions. The worst traffic condition among the intersections analyzed exists at Sixth/Brannan which currently operates at capacity, level of service E/F. This results in traffic congestion on Sixth and Brannan Streets extending several blocks in the peak-hour. Vehicles at this intersection experience delays and queues that extend as far back as the Skyway. Operations at Levels of Service E and F represent unacceptable delay to motorists and queues of vehicles are present during the p.m. peak-hour on the approaches to the freeway on-ramps. Vehicles from the project would be expected to contribute to the existing jammed conditions at these intersections although the project effects would not be sufficient to change either the V/C ratio or Level of Service during the p.m. peak-hour.

c. Freeway Corridor Analysis

The project would contribute to increases in traffic on the major freeways serving downtown San Francisco. Traffic generated by the project would increase total traffic on major freeways during the p.m. peak-period by 0.1% or less and the p.m. peak-hour by 0.1% or less. Such increases would not be measurable against the day-to-day fluctuations in traffic volumes. Because the Bay Bridge eastbound traffic flow is functionally at capacity, the travel demand from the project would not be expected to increase the flows on the Bay Bridge in the peak-hour; rather the East Bay-bound auto traffic from the project would most likely compete with and possibly displace existing users of the Bay Bridge into later portions of the peak-period. This competition for access would occur at the on-ramps to the Bay Bridge and any displacement of existing users to later time periods would depend upon the time of arrival of project vehicles at the on-ramps. Freeway impacts caused by cumulative development are also discussed in the Regional Cumulative Impacts section, page 135.

TABLE 9

INTERSECTION PERFORMANCE
EXISTING AND PROJECTED

Demand-to-Capacity Ratios / Levels of Service

Intersection	Existing	With Project	Year 2000[3]
Eighth/Market[1]	0.77 / C	0.78 / C	0.83 / D
Eighth/Mission[1]	0.80 / C-D	0.83 / D	0.88 / D
Eighth/Bryant[1]	0.68 / B-C	0.68 / B-C	0.75 / C[1]
Fifth/Bryant	0.69 / B-C[1]	0.69 / B-C	0.76 / C
	- / D[4]		- / D[4]
Sixth/Brannan[2]	0.99 / E-F	0.99 / E-F	1.41 / F

[1]Counts conducted by EIP Corporation, Thursday, May 30, 1985, at 4:00 p.m.

[2]DKS Associates, May 1985. Also "Mission Bay Special Studies: Transportation Network," DKS, September, 1986, Table 6, page 34.

[3]Cumulative analysis discussed on page 134.

[4]"Mission Bay Special Studies: Transportation Network" prepared by DKS Associates for the Department of City Planning, September, 1986, Table 6, page 34. This study includes levels of service (LOS) for this intersection. The differences between the DKS and EIP existing LOS are due to traffic conditions on days when traffic was counted and to different traffic assumptions used by the traffic consultants. Future LOS are projected to be the same due to the different traffic assumptions and to different assumptions regarding buildout of the Mission Bay project. The EIP analysis assumed only a portion of Mission Bay would be constructed by 2000, while the DKS analysis assumed full buildout by 2000. It is acknowledged in the DKS report that Mission Bay would not be completely built and absorbed by 2000; the full buildout figures were used for planning purposes.

5. Parking

The project's parking demand has been calculated on the basis of trip generation, modal split data, and residential auto ownership. Based upon the project's travel patterns, parking demand would be calculated as follows:

- 823 daily work trips (office and retail)[8] x 22% auto/1.6 persons per auto[3]/2 one-way trips per auto = 57 long-term parking spaces.
- 11,670 daily non-work trips (office and retail)[8] x 10% auto[2]/1.3 persons per auto[2,3]/2 one-way trips per auto/5.5 turnovers daily[8] = 82 short term parking spaces.
- 1,999 residential units[8] x 0.60[9] cars per household = 1,199 residential parking spaces.

  Total project demand = 1,338

The project would provide 904 spaces in an on-site garage, leaving an excess demand of 434 spaces. There are currently 330 parking spaces on the site; about 100 of these spaces are used by people not associated with the site. These users would be displaced by the project. The project would have a total excess demand of 534 spaces (434 + 100). This level of excess demand would result in an increase in project vicinity parking occupancy from 83% to 100%, with a need for about 150 additional spaces.

The proposed project is in the C-3 zone which does not require off-street parking for commercial uses. However, the City Planning code does require off-street parking for residential uses at one space per four dwelling units.[10] The code requirement for the project would be 500 parking spaces. The project is providing 904 parking spaces which is 404 spaces in excess of the total spaces allowed by code. The City Planning Code allows accessory parking up to 150% of the required amount. Conditional Use authorization would be required for the 154 parking spaces in excess of the amount allowed as an accessory use.

Parking demand for the residential component of the project is difficult to pinpoint at this preliminary stage in project planning. This is due to the variation in parking demand with the type of housing and tenant that is attracted to the complex. In reviewing MTC data on car ownership for residential areas in the downtown and parking demand

studies[11], there were three levels of potential parking demand identified depending on the housing characteristics: 1) moderate income tenants of the existing Trinity Plaza housing near the heart of Civic Center exhibit a demand close to 1 space per every four units; 2) higher income tenants of the Golden Gateway Commons near Embarcadero Center reflect a demand rate of 1 space per two units; and 3) high income tenants of the Telegraph Landing and 101 Lombard area show a demand rate closer to one space per unit. This analysis assumed 0.60 cars per household, a number derived from 1980 Census Survey data for northeast San Francisco.

The proposed project will provide 288 spaces upon completion of Phase 1 of construction, when residential demand will be approximately 690 (Phase One would entail construction of the two residential towers fronting on Mission, 1,150 units.) This indicates a deficit of about 402 parking spaces under estimated demand for the period of time between completion of Phases 1 and 2. After construction of the remainder of the project, Trinity Plaza would provide 904 parking spaces, a parking deficit of 434 spaces under estimated demand. Since there is little available on- or off-street parking, off-site parking could not meet the overflow demand for spaces created by the proposed project. The project site is within the C-3-G District, which has no requirement for off-street parking for commercial uses. The site is also in an area designated as the Downtown Core Automobile Control Area, where commuter parking is discouraged by the Master Plan to reduce vehicle trip impacts.

6. Freight Loading

The project's freight loading needs have been calculated according to City Planning Code.[10] The project's freight loading requirement would be:

o	49,600	gsf office space @ 0.1 space/10,000 sq. ft.	=	.50	spaces
o	132,500	gsf retail and restaurant space @ 1 space/25,000 sq. ft.	=	5.30	spaces
o	1,450,735	gsf residential 3 spaces plus 1 space for each 400,000 sq. ft. over 50,000 sq. ft.	=	5.0	spaces
	Total		=	10.80	spaces

Eleven loading docks would be required. The project would include 12 full size freight loading docks. Six loading docks would be accessed via either Stevenson or Jessie Street from Seventh Street. Another two loading docks for the commercial space would be accessed directly from Eighth Street. The residential towers on Mission Street would have four loading docks which would be accessed off Eighth Street and the auto court for each building.

7. Pedestrian Flows

The main pedestrian entrance to the existing building is located near the center of the Market Street facade. The proposed project would maintain the Market Street entrance, and would add other access points on Eighth Street and Mission.

Pedestrian volumes were recorded on Market Street at the main entrance to the site, at the southeast corner of the Market/Eighth intersection, and at the northeast corner of the Mission/Eighth intersection. Pedestrian trips in the peak 15 minute period in the p.m. peak-hour range from 460 on the Market Street sidewalk to about 40 pedestrians on the Mission Street sidewalk. In general, existing pedestrian flow rates range from 0.21 to 1.73 pedestrians per foot per minute, corresponding to a Level of Service range from "Open" to "Unimpeded". (See the Appendix B for an explanation of pedestrian flow rates and Level of Service. Figure B-2 shows photography of sidewalk conditions for each flow category.) The proposed project would generate 960 total pedestrian trips during the noon peak 15 minute period and about 580 pedestrian trips during the p.m. peak 15 minute period. After addition of project pedestrian volumes, flow rates would increase to a range from 0.63 to 2.96, or "Unimpeded" to "Impeded" levels of service. The complete listing of flow rates is shown in Tables 10 and 11, pages 123 and 124.

8. Construction Activity

During the construction period, transportation impacts would result from truck movements to and from the site during demolition, excavation, and construction activity. Demolition would generate an average of 30 truck movements per day in or out of the project site, between 9:00 a.m. and 3:30 p.m. Excavation would generate an average of 25 truck movements per day in or out of the project site, between 9:00 a.m. and 3:30 p.m. Trucks would use Eighth Street to reach the freeway and would haul debris and excavation

TABLE 10

PEDESTRIAN IMPACTS
MIDDAY PEAK

Location	Pedestrian Flow Rate[1] - Level of Service: Existing	Existing Plus Project
Market Street Sidewalk	0.68 - Unimpeded	2.38 - Impeded
Market/Eighth		
Market Sidewalk	1.15 - Unimpeded	2.19 - Impeded
Eighth Sidewalk	0.62 - Unimpeded	2.25 - Impeded
Market Crosswalk (East)	0.29 - Open	0.67 - Unimpeded
Eighth Crosswalk (South)	0.66 - Unimpeded	1.04 - Unimpeded
Mission/Eighth		
Mission Sidewalk	0.28 - Open	0.93 - Unimpeded
Eighth Sidewalk	0.49 - Open	1.49 - Unimpeded
Mission Crosswalk (East)	0.43 - Open	0.83 - Unimpeded
Eighth Crosswalk (North)	0.44 - Open	0.84 - Unimpeded

[1] Pedestrian flow rate expressed as pedestrians per foot of sidewalk per minute during the peak 15 minute period. The noon peak 15 minute period is the quarter-hour in which maximum pedestrian activity takes place and it occurs between 12 p.m. and 1 p.m.

TABLE 11

PEDESTRIAN IMPACTS
PM PEAK

Location	Pedestrian Flow Rate[1] - Level of Service: Existing	Existing Plus Project
Market Street Sidewalk	0.56 - Unimpeded	1.90 - Unimpeded
Market/Eighth		
Market Sidewalk	1.53 - Unimpeded	2.37 - Impeded
Eighth Sidewalk	1.66 - Unimpeded	2.96 - Impeded
Market Crosswalk (East)	0.31 - Open	0.63 - Unimpeded
Eighth Crosswalk (South)	0.63 - Unimpeded	0.95 - Unimpeded
Mission/Eighth		
Mission Sidewalk	0.21 - Open	0.73 - Unimpeded
Eighth Sidewalk	1.73 - Unimpeded	2.54 - Impeded
Mission Crosswalk (East)	0.69 - Unimpeded	1.02 - Unimpeded
Eighth Crosswalk (North)	1.06 - Unimpeded	1.39 - Unimpeded

[1]Pedestrian flow rate expressed as pedestrians per foot of sidewalk per minute during the peak 15 minute period. The p.m. peak 15 minute period is the quarter-hour in which the maximum pedestrian activity takes place and occurs between 4:30 p.m. and 5:30 p.m.

materials to a disposal site in South San Francisco. Construction activities (steel erection and finishing) would generate an average of 15 truck movements per day. Deliveries of materials would occur between 9:00 a.m. and 3:30 p.m. The actual duration of each construction activity has not yet been established.

During the construction period, the sidewalks fronting the project site on Mission, Eighth and Market Streets would be affected, although they would probably not be closed. Lane and sidewalk closures are subject to review and approval by the Department of Public Works.

Temporary parking demand from construction workers' vehicles, and impacts on local intersections from construction worker traffic, would occur in proportion to the number of construction workers who use automobiles.

Construction truck access to the site could be from Mission, Eighth, Jessie, or Stevenson Streets. The impact of construction truck traffic would be a slight lessening of the capacities of access streets and haul routes because of the slower movements and larger turning radii of trucks. Muni runs along all three sides of the project block; Market, Eighth, and Mission, although there are no stops along the project frontage. Lane blockage on Mission Street by queued trucks, if it were to occur, would reduce the capacity of this street and would interfere with the operation of the diamond transit lane. Blockage during times of peak traffic flow would have greater potential to create conflicts than during non-peak hours because of the greater peak-hour numbers of vehicles in adjacent lanes and vehicles (autos and buses) that would have to maneuver around the queued trucks.

CUMULATIVE TRAVEL DEMAND

To date, cumulative analysis has been conducted on the basis of a list of proposed development in the greater downtown area. The Downtown Plan EIR method presents a refinement of the existing transportation analysis process in which projections of employment growth, independent of a list of proposed projects, are used to project future travel.[12]

The travel data presented in the Downtown Plan EIR transportation sections (and in the transportation analysis for this report) are projections of total demand on the transportation system serving San Francisco. The projections comprise three components of travel demand. Two of the components were developed through an intricate travel modeling process for the C-3 District of San Francisco. These first two components of travel demand are C-3 District work (employee journey-to-work) travel and C-3 District non-work (all other) travel. The third component is non-C-3-District travel, which was forecast through an analysis of regional trends adjusted for the effect of development in the C-3 District. Non-C-3 travel is defined as travel that has neither an origin nor a destination in the C-3 District. Thus, non-C-3 travel includes travel to and from other parts of downtown and trips through San Francisco from other parts of the region. Employment forecasts are not specifically used in the non-C-3 travel analysis.

The Downtown Plan EIR method projects future travel on the basis of modal splits that are assumed to change over time in response to transit service improvements and to increased levels of peak-period congestion on auto facilities. The service improvements assumed to occur correspond to the vehicle acquisition portions of the 5-Year Plans for Muni, AC Transit, SamTrans, CalTrain, and Golden Gate transit. In BART, both the vehicle acquisition program and the trackage improvements (Daly City tail track) were assumed to occur.

These planned improvements would allow system capacities to keep pace with demand increases over time. The Downtown Plan EIR transportation analysis also assumes that regional auto use will continue to change over time in response to increasing levels of congestion on the bridges and freeways serving the City. The analysis projects a shift from single-occupant auto use (drive alone) for commuting to ridesharing (carpool, vanpool) and to transit use. The assumptions of continuing shift from auto to transit and ridesharing, most apparent in the 2000 modal splits, are made on the basis of long-term trends in transit use in the San Francisco commute corridors. Census data show that in the period 1970 to 1980, transit use for commuting increased. Similarly, Bay Bridge data show that ridesharing has been increasing over the last seven years.[13] Thus, the shift to transit and ridesharing is well-established in San Francisco commute corridors.

The Downtown Plan EIR approach for forecasting future land use, employment, and residence patterns is based on a conceptual framework of the process of urban economic development. The analytical procedures incorporate a variety of types and sources of data and information concerning past, current, and likely future conditions regarding economic, real estate, demographic, and public-policy factors.[14] The employment forecasts have been used as the basis for the travel demand modelling process. As described above, the C-3 District comprised two of the three components of total travel.

The employment forecasts have been used as the basis for the travel demand modeling process. Because of the use of the employment projections in the travel demand modeling process, the transportation forecasts for the year 2000 are independent of lists of cumulative development.

The travel demand modeling process comprises the following steps:

- Trip generation rates (empirical measures of total travel to and from a specific land use) were applied to employment forecasts by business activity (i.e., different rates were used for various land uses).
- The total travel from the C-3 District was distributed to seven Bay Area zones on the basis of projections of future employee residence patterns and origin-destination patterns for non-work travel.
- Trips to each of the seven regional zones were assigned to travel modes on the basis of modal splits (distribution of travel over the transportation modes, auto, transit, etc.) developed from the C-3 District surveys.

At this stage of the process, the model forecasts total travel from the C-3 District. To complete the process and to allow analysis of the effect of travel demand from C-3 District development on the transportation network, the non-C-3 travel demand was analyzed. The total travel demand was calculated by summing C-3 District work and non-work travel and non-C-3 travel at sub-regional measuring points (called screenlines) located at or just beyond the San Francisco county line (except for Muni and BART Westbay service which were measured inside San Francisco, outside the downtown). The total travel demand was then compared to available service (capacity) at the screenlines and operating conditions (demand-to-capacity ratios) were analyzed assuming planned improvements. The results of those analyses are summarized later in this section.

For future years, the C-3 travel modeling process was modified to incorporate changes in travel patterns (modal split changes, different travel times), employee residence patterns and changes in land use patterns. The process incorporates the dynamic aspects of changing Bay Area travel patterns, rather than assuming a fixed, unchanging condition over time.

The Downtown Plan EIR travel demand model has refined the trip generation process by incorporating discounting factors that adjust the trip generation rates to give travel to and from the C-3 District as a whole (see Table 12, page 129); it does not include trips internal to the C-3 District. Other differences in travel among the modes, particularly regional auto and AC Transit, are the result of the refined modal split process used in the Downtown Plan EIR. The Downtown Plan EIR analysis has assumed that the modal split would change over time in response to the increasing levels of congestion at the regional screenlines (described in the Downtown Plan EIR). Thus, because the Bay Bridge is at or near capacity in the p.m. peak-hour eastbound, the Downtown Plan EIR modal split projects a proportionately lower increase in auto demand to the East Bay. Similarly, for AC Transit the Downtown Plan EIR recognizes that current regional transit policy dictates no increases in AC Transit transbay service and thus, the ability of AC Transit to carry additional riders transbay will be restricted in the future. Use of this changing modal split is a refinement that allows the travel model to more accurately forecast travel demand and thus, the Downtown Plan EIR results represent a more accurate level of projection than has been possible using methods and data available to date.

The Downtown Plan EIR and the Consultant's Report on Downtown Growth Management Alternatives (Environmental Science Associates, 1983) contain extensive discussions of the analyses and data used to forecast employment, land use (see Sections cited above) and transportation demand (see Section IV.E and Appendix J of those reports).

1. Transit

The transit agencies serving downtown San Francisco carry approximately 60% of the peak-period employee work travel, as well as about 20% of the peak-period other travel. P.M. peak-hour and peak-period loadings on the local and regional transit routes were found to be near capacity for some of the routes in 1984 (see Table 13, page 130). The

TABLE 12

DOWNTOWN PLAN - OUTBOUND P.M. PEAK-HOUR CUMULATIVE TRAVEL DEMAND FOR THE C-3 DISTRICT

	Downtown Plan (1984-2000)[1]
Work Person Trips	41,400
Other Person Trips	12,100
Total Person Trips	53,500
Muni	
Northeast	1,600
Northwest	1,800
Southwest	1,100
Southeast	1,100
BART	
East Bay	11,800
West Bay	2,400
AC Transit	200
GGT	
Bus	3,200
Ferry	800
SamTrans	1,200
SPRR/CalTrain	1,800
Regional Auto[2]	
Golden Gate Bridge	410
Bay Bridge	1,250
U.S. 101	470
Interstate 280	470

[1]Travel from the C-3 District only. The analysis used in the Downtown Plan DEIR assumes regional travel growth not shown in the above data but discussed in the remainder of this section.

[2]Vehicle trip-ends; calculations made on the basis of 2.7 persons per carpool and 12 persons per vanpool. Person tri-ends on transit cannot be added to vehicle trip-ends to obtain total person trip ends because of the varying numbers of persons per vehicle.

Source: Environmental Science Associates, Inc., EIP Associates, Inc.

TABLE 13
OUTBOUND REGIONAL TRANSIT DEMAND AND SERVICE LEVELS

Transit Agency	1984 Volume	1984 P/S[1]	1984 LOS[2]	DOWNTOWN PLAN (2000) Volume	DOWNTOWN PLAN (2000) P/S	DOWNTOWN PLAN (2000) LOS	Project Percent[3]
PEAK-HOUR							
Muni							
Northeast	7,100	1.16	D	8,800	1.05	D	1.3
Northwest	8,200	1.26	E	10,100	1.25	D	0.3
Southwest	13,500	1.45	E	16,600	1.42	E	0.2
Southeast	5,300	1.06	D	7,400	1.01	D	0.3
BART							
East Bay	16,100	1.53	F	27,900	1.42	E	0.2
West Bay	7,700	1.10	D	10,100	1.06	D	0.3
AC Transit	9,100	0.94	C	10,500	1.08	D	0.1
GGT Bus	5,300	1.00	C	8,500	0.91	C	0.1
GGT Ferry	800	0.57	B	1,500	0.38	A	0.1
Tiburon Ferry	200	0.40	A	300	0.60	B	---[4]
SamTrans	1,900	1.12	D	3,100	1.19	D	0.1
CalTrain (SPRR)	3,100	0.61	B	4,900	0.79	C	0.3
PEAK-PERIOD							
Muni							
Northeast	12,600	1.06	D	15,500	0.95	C	1.3
Northwest	13,100	1.13	D	15,300	1.05	D	0.4
Southwest	23,300	1.31	E	28,700	1.29	E	0.2
Southeast	9,100	1.00	C	12,100	0.88	C	0.3
BART							
East Bay	25,800	1.54	F	44,100	1.40	E	0.2
West Bay	11,300	0.80	C	14,600	0.77	C	0.3
AC Transit	14,000	0.95	C	17,000	1.16	D	0.1
GGT Bus	7,600	0.90	C	12,200	0.81	C	0.1
GGT Ferry	1,000	0.56	B	1,700	0.33	A	0.1
Tiburon Ferry	300	0.60	B	500	1.00	C	---
SamTrans	2,900	1.12	D	4,500	1.15	D	0.1
CalTrain (SPRR)	4,500	0.68	B	6,200	0.77	C	0.3

[1] Passengers per Seat is the ratio of total demand to seated capacity.

[2] Level of Service is scale ranging from A to F that relates P/S ratios to passenger loading conditions on transit vehicles.

[3] The percent of demand generated by the project.

[4] --- Less than .05 percent.

Source: Environmental Science Associates, Inc.; EIP Associates.

values shown in Table 8 are sums over the peak-hour and the two-hour peak-period. Within the peak-hour, there would be periods of time when the loading ratios would be higher than those shown for the hour (peak-of-the-peak conditions). Individual transit vehicle loadings vary on a day-to-day basis because of fluctuations in ridership (demand) and because of variations in operating conditions caused by traffic congestion, equipment availability, and/or system breakdowns. Photographic examples of p.m. peak-hour loadings on Muni vehicles are shown in Appendix B, Figures B-1 to B-2).

The 1981/82 transit ridership and loading data used in the Downtown Plan EIR analysis are summations of actual counts of individual transit lines for that period in time. Calculations are made on the basis of observed operating conditions, as opposed to scheduled operations. Muni supplied the data for the Downtown Plan EIR analysis from its ongoing program of ridership checks. (The data supplied and collected for each transit agency are in the supporting documentation for the Downtown Plan EIR, on file with the Office of Environmental Review, 450 McAllister St., San Francisco, CA.) Muni was involved in the process of verifying the transportation analysis for the Downtown Plan EIR and as a result of that process, approved of the use of Muni data and the projections derived from that data.

The Level of Service concept, similar to that developed for highway operations, has been applied to both bus transit and rail transit. Passengers per seat (i.e., total passengers divided by the number of seats) has been used as the measure of effectiveness to define the various level of service ranges. Table B-3, Appendix B, shows the relationship between Level of Service and passengers-per-seat (p/s) ratios for bus transit systems.

Passengers-per-seat ratios are only one measure of adequacy of service. The constraints of operating on heavily used streets in and around the downtown cause transit-vehicle bunching, loss of running time and missed schedules, all of which reduce service, reliability, and ultimately, capacity. In some respects, this would not be evident from simple quantitative analysis. In addition to these inefficiencies inherent within the transportation system, there are other factors which would affect overall transit capacities. These include variability in daily and seasonal ridership for which an absolute capacity must be available, as well as transit riders who remain uncounted

because their transit trips both start and end beyond the screenlines used in this analysis. Daily fluctuations in fleet availability also affect system capacity.

Further, policy considerations dictate minimum operating conditions on certain lines; minimum headways that have been established to maintain transit access to areas served by those lines are not warranted on the basis of ridership alone. When averaged together, the ridership data from these lines may slightly distort overall ridership conditions.

During the p.m. peak-hour in 1984, all of the transit agencies were found to be operating in Level of Service D or better, with the exception of BART Eastbay where conditions were found to be at Level of Service F, and Muni in the Northwest and Southwest corridors, where operations were found to be in Level E.

P.M. peak-period conditions on transit in 1984 are equivalent to or better than peak-hour conditions. In some cases, where demand remains at peak-hour levels during the two-hour period, the passengers-per-seat ratios in the two-hour period are higher than in the one-hour period. This anomaly is the result of transit agencies' providing express (or additional) service during the peak-hour, but not during the entire peak-period. An example of this type of operation may be seen on BART, where three extra trains operate in transbay service in the peak-hour but not in the rest of the peak-period. Another factor involved is the distribution of demand (ridership) at uniformly high levels over the peak-period.

Both transit demand and capacity have been assumed to increase during the period 1984 and 2000. The discussions of transit capacity increases for the agencies are based on the Five-Year Plans and Capital Improvement Plans of the various transit agencies; they appear in Appendix J of the Downtown Plan EIR, pages J.25-J.26. This material, which is discussed below and summarized in Table 13, page 130, is incorporated by reference. The future capacities were developed by applying percentage increases, expected in the future, to observed existing capacity. Thus, to the extent that the existing conditions contain inherent capacity reduction for missed runs, the future capacity projections have taken into account the inability of the transit systems to provide 100% of scheduled capacity. As noted above, the Muni analysis calculates capacity on the basis of all runs

leaving the C-3 District in the p.m. peak. For all of the transit analyses, only peak-direction vehicles are counted.

Future transit demand and loadings for the Downtown Plan in the year 2000 are shown in Table 13 for both the peak-hour and the peak-period. The transit demand from the project would range between 0.1% and 1.3% of the total peak-hour travel demand on the individual transit carriers in the year 2000.

Peak-hour transit demand on Muni in the year 2000 would increase about 25% over 1984 levels in the Northeast, Northwest and Southwest corridors. Muni demand in the Southeast corridor would increase about 40% between 1984 and 2000. Peak-hour demand on the other agencies would increase between 30% and 70% between 1984 and 2000.

Peak-period increases in demand would be between 15% and 70% during the 1984 to 2000 period. Overall peak-period travel would be expected to increase about 30% between 1984 and 2000. Peak-period demand generated by the project would range from 0.1 to 1.3% of the total peak-period travel demand. Peak-hour and peak-period passenger loadings would be worse than in 1984, although most systems would operate in acceptable conditions (Level of Service D or better). However, BART Eastbay and Muni to the Southwest would be in Level of Service E during the peak-hour and the peak-period.

It is important to note that the Five-Year Plan improvements for the transit systems are designed both to provide for future demand increases, and to improve service levels from existing conditions. For new vehicles to expand system capacity rather than represent replacement on a one-to-one basis, operating revenues would similarly need to be increased. During the year 2000 peak-hour, Muni service to the Southwest would exceed the desirable passengers per seat ratios of 1.25.[15] Although the transit demand in the corridor in excess of the desirable loadings would be able to be accommodated under crowded conditions and thus would not be excess demand; (that is, not beyond capacity), demand in excess of the desirable loadings would mean that additional transit service over that assumed to occur by 2000 would need to be provided to allow transit operations in the corridor to meet the goal set by Muni. To meet the goal of 1.25 passengers per seat in the peak-hour, Muni would have to increase service by about 14% in the Southwest corridor over the amount of service assumed to occur in 2000.

If transit service were not increased beyond the amounts assumed to occur by the year 2000 in the Downtown Plan EIR, transit operations (in terms of passenger comfort) would be slightly better than 1984 conditions. Peak-hour and peak-period passengers-per-seat ratios would be lower than 1984 ratios even though service (in some corridors) has been assumed to increase as much as 80% between 1984 and 2000.

If the Downtown Plan's Goals regarding increased transit use were achieved, and the proposals in the Plan regarding transit service improvements were to be fully developed and in place, the impacts on transit agencies would be less than described above. If the Goals were achieved, transit agencies would experience greater levels of demand than under this analysis but overall passenger loadings would be lower (and within desirable levels) because of increased transit service availability that would come about if the proposals stated in the Plan are developed.

2. Traffic

a. Localized Cumulative Development

The localized aspects of cumulative development on street and intersections immediately adjacent to the project site were prepared using underlying traffic growth factors representing a conservative, unrestrained auto demand condition for street traffic in the downtown and as such is probably higher than actual traffic growth may be in the future downtown. It is estimated that in the City's south of Market area, west of Sixth Street traffic volumes would grow eight percent by 1990 and ten percent by the year 2000.[16] These growth factors include traffic generated by the proposed project plus traffic generated by cumulative development in the surrounding area. Table 9, page 119, shows the levels of service and demand-to-capacity ratios at the intersections analyzed in the site vicinity as they currently exist, and estimated for the year 2000. Generally, levels of service do not change significantly from their existing conditions, however, peak conditions would tend to deteriorate by the year 2000. Most important, degraded traffic operation due to cumulative development at both Market/Eighth and Mission/Eighth would disrupt Muni surface operations.

b. Regional Freeway Analysis

Analysis of traffic conditions at the regional screenlines has been conducted for both the p.m. peak-hour and the two-hour p.m. peak-period. A.m. peak traffic conditions at regional screenlines have the effect of metering the amount of traffic that reaches the downtown from outside of the City. This analysis has considered p.m. peak conditions. P.m. conditions are usually most severe on freeways and streets within San Francisco, whereas a.m. peak conditions are most severe at locations outside the City.

Traffic demands at the regional screenlines in 1984 (see Table 14, page 136) during the p.m. peak-hour were found to use between 90% and 100% of the available capacity on the freeways and bridges. Although the eastbound capacity of the Bay Bridge is calculated to be 9,000 vehicles per hour (vph), the 1984 peak-hour demand shown in Table 14 represents the effective eastbound capacity. The volume figures shown in Table 14 for 1984 for the one-hour and two-hour periods are averages of several days; thus, values for individual days may be different than the average.

Peak-hour freeway operating conditions in 1984 were found to be generally in Level of Service D to E conditions, which would indicate unstable flows in the 35 mph to 45 mph range. Table B-4, Appendix B, shows the Level of Service for freeway operations. Peak-of-the-peak conditions within the peak-hour were found to be worse than the hourly conditions because of surges in traffic demand during the peak-hour. Conditions during the peak-period at the screenlines would be similar to those experienced during the peak-hour.

As shown in Table 14, demand during the peak-hour in the East Bay and Peninsula corridors would be expected to increase about 15% between 1984 and 2000. Peak-hour demand in the North Bay corridor would increase by about six percent between 1984 and 2000. The project travel demand, about 30 p.m. peak-hour and 50 peak-period outbound regional vehicle trip-ends would represent 0.1% or less of the total demand in the year 2000. Both the East Bay and Peninsula corridors would have excess peak-hour demand that would not be met during the peak-period.[17] The North Bay corridor would have excess demand in the peak-period. Excess auto demand would result in either a spreading of the demand into the hours adjacent to the peak-period or in increased transit and

TABLE 14

OUTBOUND REGIONAL AUTO DEMAND

Regional Auto Corridor	Capacity	1984 Volume	Downtown Plan (2000) Volume	Downtown Plan (2000) Project Percent
Peak-Hour				
Bay Bridge (I-80)	9,000	8,540	9,790	0.1
Golden Gate Bridge (U.S. 101)	7,200	6,740	7,150	0.1
U.S. 101 (south of Harney Way)	8,000	7,390	8,400	--[1]
I-280 (between Alemany Blvd. and San Jose Avenue)	8,000	7,610	8,650	--
Peak-Period				
Bay Bridge (I-80)	18,000	17,880	19,330	0.1
Golden Gate Bridge (U.S. 101)	14,400	13,870	14,850	0.1
U.S. 101 (south of Harney Way)	16,000	14,200	16,530	--
I-280 (between Alemany Blvd. and San Jose Avenue)	16,000	13,620	15,890	--

[1] -- Less than .05 percent.

Source: Environmental Science Associates, Inc.; EIP Associates.

ridesharing use should additional transit service (beyond that assumed to occur by the year 2000) or ridesharing incentives be provided.

Operating conditions at the regional screenlines would be at or near capacity in Level of Service E. Traffic flow conditions would be expected to be very unstable and could experience temporary flow interruptions throughout the peak-period. Peak-of-the-peak conditions would be prevalent during the peak-hour and might extend into the peak-period. The overall two-hour commute period would not be expected to increase substantially in the future. Rather, the occurrence of peak-of-the-peak conditions, now less than one hour, would most likely expand to fill the one-hour peak.

3. Parking

The estimated parking demand (both long-term and short-term) from the C-3 District in 1984 was found to be about 45,300 spaces, which would occupy about 94% of the 48,000 parking spaces in and near the C-3 District.[18] The short-term parking demand, while representing about 25% of the equivalent daily demand, is about 65% of the daily vehicle travel. Although the equivalent daily demand would leave about 10% of the parking supply vacant, surges in short-term demand (more travel in one period than in another period) can cause temporary localized overloads of parking facilities within various portions of the downtown, even though parking may be available elsewhere in the downtown.

The C-3 District would generate demand for approximately 58,000 equivalent daily parking spaces in the year 2000 under the Downtown Plan, an increase of 28% from 1984. Short-term demand would continue to represent about 25% of the total demand. The project parking demand would represent about 2.3% of the total demand from the C-3 District. The parking supply has been assumed to be about 51,000 spaces. There would be a parking deficit of about 7,000 spaces in the year 2000 if vehicular demand occurs as projected. However, as shown in Table 14, the analysis for the year 2000 forecasts excess auto demand in the peak-hour and the peak-period. If the excess demand is accommodated on transit or ridesharing, then the overall parking demand would decrease from the above estimate by about 2,300 spaces. If the Goals of the Downtown Plan are met, total parking demand in the year 2000 would be about 48,100 equivalent daily spaces,

an increase of six percent over 1984. If the Goals were achieved, there would not be a parking deficit.

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[1]San Francisco Department of City Planning, Guidelines for Environmental Review: Transportation Impacts, September 1983.

[2]Caltrans, Tenth Progress Report on Trip Ends Generation, July 1975.

[3]San Francisco Department of City Planning, The Downtown Plan Environmental Impact Report (EIR), EE81.3, certified October 18, 1984. This document is an analysis of projected growth in the C-3 District to the year 2000 under the Downtown Plan . The transportation analysis in the EIR includes projections of future modal splits for work and non-work travel for the p.m. peak-period, peak-hour and daily time periods. This document is on file and available for public review at the Office of Environmental Review, 450 McAllister Street.

[4]San Francisco Department of City Planning, January 1983, Transportation, an Element of the Master Plan.

[5]The one-time Transit Impact Fee requires developers of office projects in San Francisco to contribute to a fund to finance the increased cost of Muni services necessitated by their projects at the rate of $5 per gross square foot of new construction. This ordinance was recently upheld by the San Francisco Superior Court. Based on application of the $5 rate to new office space, (49,600 gsf), the project would yield $248,000.

[6]According to Bruce Bernhard, Muni Chief Accountant, telephone conversations, October 11, 1984.

The deficit due to the project would be 684 peak-period Muni trips per day x 252 working days per year x $0.50 deficit per ride = $86,184. The total annual Muni trips were derived using the 24-hour trips methodology specified in the Guidelines for Environmental Impact Review: Transportation Impacts, Department of City Planning, September, 1983.

[7]Ward Belding, Supervisor of Office of Research, Bay Area Rapid Transit District, telephone conversation, May 1984.

The deficit due to the project would be 682 daily BART trips generated by the project x 252 working days per year x $1.06 deficit per rider = $182,175.

[8]Calculation of project parking demand requires that work and non-work trips be calculated from total square footage of office and retail uses and not net new square footage as used in Table 7.

[9]Car Ownership per Household, 1980 Census Data, Tract 1760. The range of car ownership in the project area is .10 to .60 cars per household; the higher number of .60 was assumed for worst case analysis.

[10]City and County of San Francisco, Department of City Planning, Downtown Plan, adopted by County Board of Supervisors, Ordinance 414-85, September 10, 1985.

[11]"UTPP Car Ownership Data from the 1980 Census", Metropolitan Transportation Commission, 1980. Selected zones in San Francisco from the 550 zone network; Telegraph Landing area - zone 431, Golden Gateway area - zone 429, Trinity Plaza area - zone 426; and "Parking Demand Study for Park Hill Residential Project", Department of City Planning, City an County of San Francisco, December 22, 1982.

[12]The Downtown Plan EIR contains about 50 pages of text devoted to the description of transportation impacts in the greater downtown area, as well as an additional 30 pages of text describing transportation mitigation measures. The information in this EIR is not intended to be a comprehensive summary of the transportation analysis in the Downtown Plan EIR, but summarizes portions relevant to the proposed project and its contribution to cumulative impacts. For details and assumptions used to arrive at the data and results presented in the Downtown Plan EIR, see Volume I, Sections IV.E, Transportation Setting and Impact, and V.E, Transportation Mitigation, of the Downtown Plan EIR, which are incorporated by reference into this report and summarized in the text as appropriate.

[13]In 1977, peak average vehicle occupancy westbound on the Bay Bridge was 1.7 persons per vehicle. By 1983, in response to increasing congestion and increased travel and parking costs, peak average vehicle occupancy westbound increased to 2.1 persons per vehicle. Data are from Traffic Survey Series A-48 and MA-60, Spring 1977 and Spring 1983, Metropolitan Transportation Commission.

[14]The Downtown Plan EIR contains extensive discussion of the methods and results used to forecast future C-3 District land use and employment. Vol. 1, Sections IV.B, Land Use and Real Estate Development; IV.C, Business and Employment; IV.D, Residence Patterns and Housing; and Vol. 2 Appendices G, Land Use and Real Estate Analysis; H, Business and Employment Analysis; and I, Theoretical Discussion of Housing Market Effects/Methodology for Forecasting Residence Patterns, of the Downtown Plan EIR, which contain detailed information about methods used to forecast future employment in the C-3 District, are incorporated by reference into this report and summarized in the text as appropriate. The employment forecasts in the Downtown Plan EIR for the year 2000 exceed the employment projected using the current list-based cumulative analysis, as the list cannot take into account projects not yet proposed.

[15]San Francisco Municipal Railway, Short-Range Transit Plan 1983-1988, July 1983.

[16]Underlying growth factors were derived from background reports for the Downtown Plan EIR and assume a lower degree of mitigation for Downtown Plan goals. Achievement of Downtown Plan goals would greatly reduce these impacts.

[17] Downtown Plan EIR, Volume I, Table IV.E.4, p. IV.E.36, contains a discussion of the implications of excess demand at the regional screenlines.

[18] The parking survey data and other supporting calculations and data used in the Downtown Plan EIR transportation impact analysis are on file and available for public review at the Office of Environmental Review, Department of City Planning, 450 McAllister Street.

F. AIR QUALITY

Upon completion, the project would affect air quality in two ways. Emissions would be generated by project-related traffic, and by combustion of natural gas for building space and water heating. Transportation sources would account for over 95% of project-related emissions.

Table 15, page 142, shows projected daily emissions of pollutants in 2000 from project-generated traffic, and projected daily emissions in 2000 for C-3 District development projected by the Downtown Plan EIR (EE81.3, certified October 18, 1984), and total emissions projected for the entire Bay Area by the 1982 Bay Area Air Quality Plan. The project would contribute about 5.8% to the total emissions generated by Downtown Plan development, in 2000.[1]

Nitrogen oxides (NOx) and hydrocarbons (HC) are both chemical precursors of ozone. Motor vehicles emit more NOx than HC, and the emissions from building natural gas combustion would consist primarily of NOx. As demonstrated by the Livermore Regional Air Quality model (LIRAQ) regional ozone computer simulations conducted for the 1982 Bay Area Air Quality Plan, an increase in the future NOx emissions compared to HC emissions would lead to a decrease in ozone compared to present levels. This model has also shown that Bay Area ozone concentrations are expected to be within the federal standard in 1987, and thereafter. As future NOx emissions from cumulative development in San Francisco would exceed future HC emissions, this development would not lead to an increase in total Bay Area ozone concentrations.

At the same time, total emissions of both NOx and HC are expected to decrease in San Francisco. Total NOx emissions would decrease in San Francisco by about two percent from 1984 to 2000, but would increase in the Bay Area by about five percent from 1984 to 2000. It is possible that excess NOx emissions generated by cumulative development (including the project) could increase ozone and/or nitrogenous oxidant concentrations further downwind, outside the Bay Area. In addition, NOx emissions generated by cumulative development (including the project) throughout the Bay Area could increase acid rain further downwind, outside the Bay Area, though to a relatively small extent due to the magnitude of the increase and to dilution over time and distance.

TABLE 15

PROJECTED DAILY POLLUTANT EMISSIONS

	Emissions (tons per day)[1]		
Pollutant	Project[2]	Downtown Plan[3] 2000	Bay Area[4] 2000
Hydrocarbons	.04	0.6	560
Nitrogen Oxides	.05	0.8	492
Carbon Monoxide	.41	6.6	2,170
Particulates	.08	1.3	764
Sulfur Oxides	.007	0.1	225

[1] Project and Downtown Plan emissions calculated using BAAQMD EMFAC6C vehicular emission factors which do not take the I/M program into account. Emissions of HC, NOx, and CO include an assumed six minutes of idling time per vehicle trip. Emissions of TSP include dust disturbed from roadway surfaces.

[2] Based upon a weighted daily average of 27,309 miles traveled.

[3] Incremental emissions of C-3 District development, per the Downtown Plan EIR, Vol. 1, Table IV.I.2, p. IV.I.12.

[4] Bay Area Air Quality Management District Air Quality and Urban Development: Guidelines for Assessing Impacts of Projects & Plans, San Francisco, November, 1985.

Source: EIP Associates.

In 2000 (according to the Downtown Plan EIR), area-wide traffic volumes in the downtown area would increase by about 15% over 1984 volumes; average traffic speeds would decrease by about two mph from 1984 speeds. However, in 2000 the average vehicle is expected to emit 43% less carbon monoxide (CO) than in 1984 due to ongoing state and federal emissions controls.

CO concentrations at 11 representative intersections in the downtown study area, as analyzed in the Downtown Plan EIR, would decrease from 1984 to 2000. CO concentrations at 10 of the 11 intersections are predicted to be within the state and federal standards in 2000 under the Downtown Plan. According to the Downtown Plan EIR, CO concentrations at one intersection (Brannan and Sixth Streets) would continue to violate the state and federal eight-hour standards in 2000 under the Downtown Plan. However, a reanalysis of this intersection using updated emission factors supplied by the BAAQMD indicates that the violation would be eliminated as a result of the statewide Vehicle Inspection and Maintenance (I/M) Program, discussed further below.

The California Legislature mandated a biennial inspection and maintenance (I/M) program which applies to most cars and light trucks in California. This program went into operation in March 1984. An annual I/M program was evaluated in the 1982 Bay Area Air Quality Plan based on the 1979 source inventory. Based on predicted reduction in hydrocarbons and CO of 25% in vehicles covered, a reduction in total motor vehicle-generated CO of about 18% would be expected. The reduction in total regional CO emissions would be about 16%. The reduction in motor vehicle-generated hydrocarbons would be about 17%; the reduction in total regional hydrocarbon emissions would be about 6%. Vehicle emission factors used in the model for the Downtown Plan EIR did not take the I/M program into account. To account for reductions from the I/M program, revised emission factors have been used in the revised Modified Linear Rollback (MLR) model for this project. This is the same version of the revised MLR which was developed for the Downtown Plan EIR. By not quantifying predicted reductions from the I/M Program, CO emissions were overpredicted in the Downtown Plan EIR.

Curbside CO concentrations at selected intersections that would be affected by project-generated traffic and by cumulative development traffic were projected for conservative conditions, and are compared with ambient standards in Table 16, page 144. The results

TABLE 16

EXISTING AND PROJECTED CURBSIDE CARBON MONOXIDE CONCENTRATIONS AT SELECTED INTERSECTIONS

		Concentrations (ppm)[1]	
			Downtown Plan[2]
Intersection	Averaging Time	1984	2000
6th/Brannan	1-hour	18.1	9.8
	8-hour	13.4	7.3
	1-hour		
	8-hour		
5th/Bryant[3]	1-hour	16.2	8.9
	8-hour	12.5	6.8
8th/Bryant[3]	1-hour	17.0	10.3
	8-hour	13.4	8.8

[1]Calculations for all scenarios were made using a revised version of the Modified Linear Rollback (MLR) method described in the Downtown Plan EIR. Background concentrations were calculated to be 7.4 ppm for one hour and 5.7 ppm for eight hours in 1984, and 4.2 ppm for one hour and 3.0 ppm for eight hours in 2000. Any underlined values are in violation of state or federal CO standards. The one-hour state standard is 20 ppm, the one-hour federal standard is 35 ppm, and the eight-hour state and federal standards are 9 ppm. Emission rates were derived from the California Air Resources Board's EMFAC6D computer model as published in BAAQMD's Guidelines, November 1985. The emissions take into account the reduction in CO as a result of the ongoing statewide Inspection/Maintenance Program.

[2]Based on the economic forecast methodology contained in the Downtown Plan EIR, the project would be contained in this forecast.

[3]Includes effect of adjacent elevated freeway.

Source: EIP Associates.

indicate that CO air quality is estimated to be in compliance with the state and federal eight-hour average air quality standards under 1984 and 2000 conditions at all three intersections studied.

Emissions of total suspended particulates (TSP) resulting from construction and from vehicle trips generated by the project and cumulative development would increase TSP concentrations, which could increase the frequency of TSP standard violations in San Francisco, with concomitant health effects and reduced visibility.[2]

Emissions of sulfur oxides (SOx) generated by the project and by cumulative development would not bring San Francisco's sulfur dioxide (SO_2) concentrations measurably closer to violating the standard.

The 1982 Bay Area Air Quality Plan contains strategies which consist primarily of HC and CO emission controls on stationary sources and motor vehicles, and transportation improvements, and are aimed at attaining the federal ozone and CO standards. As discussed above, emissions associated with the project and with cumulative downtown development under the Downtown Plan are not projected by this EIR or the Downtown Plan EIR to increase ozone concentrations, and thus would not conflict with the objectives of the 1982 Bay Area Air Quality Plan regarding ozone.

Cumulative downtown development had been projected by the Downtown Plan EIR potentially to result in a violation of the eight-hour CO standard at the Brannan/Sixth intersection analyzed therein. By using the revised emission factors which account for the I/M program in the revised version of the MLR contained in the Downtown Plan EIR, the City no longer predicts violations of CO standards at the Sixth and Brannan intersection, or other intersections which have been modeled in the greater downtown. Based on the above, cumulative greater downtown development would not conflict with objectives of the 1982 Bay Area Air Quality Plan regarding CO.

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[1] Impacts anticipated from cumulative downtown development have been analyzed in the Downtown Plan Environmental Impact Report (EIR), EE81.3, certified October 18, 1984.

The air quality setting and impacts discussion in the Downtown Plan EIR (Vol. 1, pp. IV.I.1-19; Vol. 2, pp. 0.1-9; Vol. 3, Part 1, pp. C&R-I.1-11) is summarized in the text of this EIR and incorporated by reference herein.

[2]State particulate standards were changed in 1983 to concentrate on fine particulate matter which has been demonstrated to have health implications when inhaled. Until the State adopts a method for monitoring fine particulate matter, it is not possible to determine what proportion of TSP in San Francisco would be subject to review against the new standards, whether new standards would be violated, or what the health implications would be.

G. ENERGY

Pacific Gas and Electric Company (PG&E) supplies energy to San Francisco customers. Electrical energy is generated from various sources of energy including oil, gas, hydroelectric, geothermal, nuclear, wind, cogeneration and solid waste.[1] In future years PG&E expects to generate electricity from these sources and from coal. The proportion of energy generated from oil and gas is expected to decrease by 1990 with corresponding increases in the proportion of energy generated from other sources listed above.[2]

Annual energy consumption by existing uses on the site for office and retail is 1,136,000 kWh of electricity and 157,213 therms of natural gas, equal to about 116 billion Btu at the source.[3,4]

Removal of existing structures would require an unknown amount of energy. Fabrication and transportation of building materials, worker transportation, site development, and building construction would require about 300 billion Btu of gasoline, diesel fuel, natural gas and electricity.[5] Distributed over the estimated 50-year life of the project, this would be about six billion Btu per year, or about 1.5% of annual building energy requirements.

New buildings in San Francisco are required to conform to energy conservation standards specified by Title 24 of the California Administrative Code. The state allows building developers to comply with the standards through the component performance standards method that requires the incorporation of a set of specific design features, through the use of nondepletable energy resources, or by demonstrating that the building would consume no more than a specified quantity of energy, expressed as Btus per square foot per year (energy budget).[6] Documentation showing compliance with these standards is submitted with the application for the building permit and is enforced by the Bureau of Building Inspection.

Table 17, page 148, shows the estimated operational energy which would be used by the project. Peak electricity demand for the commercial space would be about 1,100 kW and would occur at about 5 p.m. on August weekdays. Peak electricity demand for the residential space would be about 11,000 kW and would occur at about 6 p.m. on December

TABLE 17

ESTIMATED PROJECT ENERGY USE[1]

Daily Natural Gas Consumption[3]		
Estimated daily natural gas consumption per square foot	3,580 Btu	
Estimated peak daily natural gas consumption	8,320 Therms	
Monthly Electric Consumption[3]		
Estimated monthly electrical consumption per square foot	5.8 kWh	(59,000 Btu)
Estimated total monthly electrical consumption	0.9 million kWh	(9.2 billion Btu)
Annual Consumption		
Estimated total annual natural gas consumption	1.9 million Therms	
Estimated total annual electrical consumption	10.8 million kWh	(110 billion Btu)
Connected kilowatt load	15,700 Kilowatts	
Estimated total annual energy consumption	305 billion Btu	(54,400 barrels of oil)

[1]The project would include 42,160 net square feet of office, 112,625 net square feet of retail and personal services area and 1,233,125 net square feet of residential space (1,641 units). A parking garage of 283,433 net square feet is also included. Energy use includes space conditioning, service water heating and lighting in accordance with allowable limits under Title 24. Estimated electricity includes an additional five kWh/square foot/yr consumed by appliances such as typewriters, computers, coffee makers, etc. than assumed by Title 24 estimates in office and commercial spaces.

[2]Btu (British thermal unit): A standard unit for measuring heat. Technically it is the quantity of heat required to raise the temperature of one pound of water 1° Fahrenheit (251.97) Calories) at sea level.

[3]These calculations are available for review at the Office of Environmental Review, 450 McAllister Street, Fifth Floor, San Francisco, California.

Note: Energy Conservation Factors:
one gallon gasoline = 140,000 Btu
one kilowatt (kw) = 10,239 Btu assuming operational efficiency of 33% for fossil or nuclear fueled power plant
one therm = 100,000 Btu
one cubic foot of natural gas = 1,100 Btu at source
one barrel of oil = 5,600,000 Btu

Source: EIP Associates.

evenings and would not coincide with PG&E's peak. Project demand for electricity during PG&E's peak electrical load periods, July and August afternoons, would be about 11,800 kW, an estimated .007% of PG&E's peak load of 16,000 MW.[7] Annual and peak daily electricity consumption are shown in Figure 33, page 150. Project demand for natural gas during PG&E's peak natural gas load periods, January mornings, would be 832 million Btu per day, or about 0.02% of PG&E's peak load of about 3.7 billion cubic feet per day.[8] Annual and peak daily natural gas consumption are shown in Figure 34, page 151.

Project-related transportation would cause additional, offsite energy consumption (Table 18, page 152). For the project trip generation described in the Transportation section, page 112, project-related trips would require gasoline, diesel fuel, and electricity annually as indicated in Table 18. The total annual transportation energy demand, converted with at-source factors to a common thermal energy unit, would be about 82 billion Btu, the energy equivalent of 24,700 barrels of oil. This projected use is based upon the mix of highway vehicles in California in 1987. Vehicle fuel use is expected to decrease as the vehicle fleet becomes more efficient and fuel more expensive.

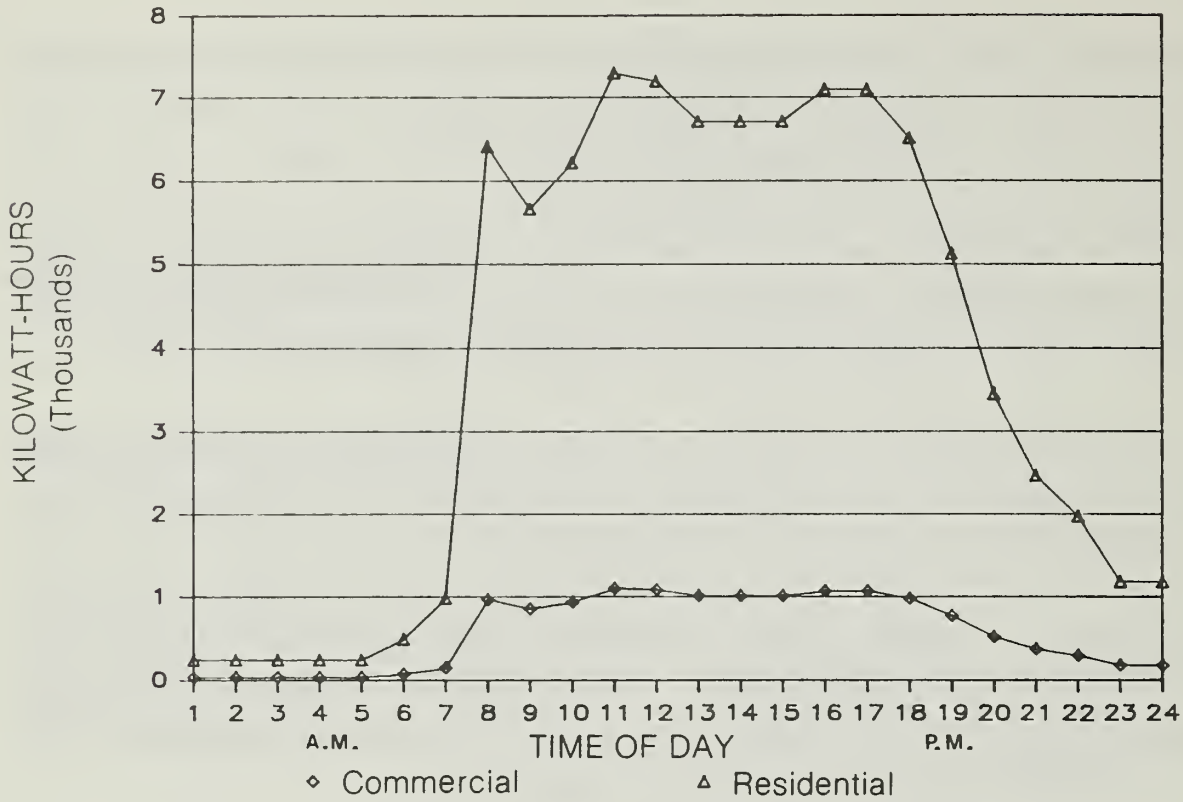
The Energy Policy Component of the Environmental Protection Element of the Master Plan contains policies and objectives that are applicable to the proposed project. Policy 4 under Objective 2 states that development should "encourage use of energy conserving appliances and lighting systems." To respond to Policy 4 of this objective, the project sponsor would install appliances complying with State Efficiency Regulations (Title 20, Chapter 2, California Administrative Code). The project also would address Policy 1 under Objective 4, to "increase the use of transportation alternatives to the automobile." The project would be convenient to public transit and the sponsor has agreed to designate a transportation broker for the project to encourage transit use by project workers. The project would not address Policy 3 of Objective 5, as it would not connect to a district heating system nor would it include cogeneration.

Projections of electrical use for growth that would occur under the Downtown Plan, as analyzed in the Downtown Plan EIR, indicate an increase of about 330 to 350 million kWh of electricity per year between 1984 and 2000 as a result of all new development occurring in the C-3 District.[9,10] Projections of gas consumption for the same period

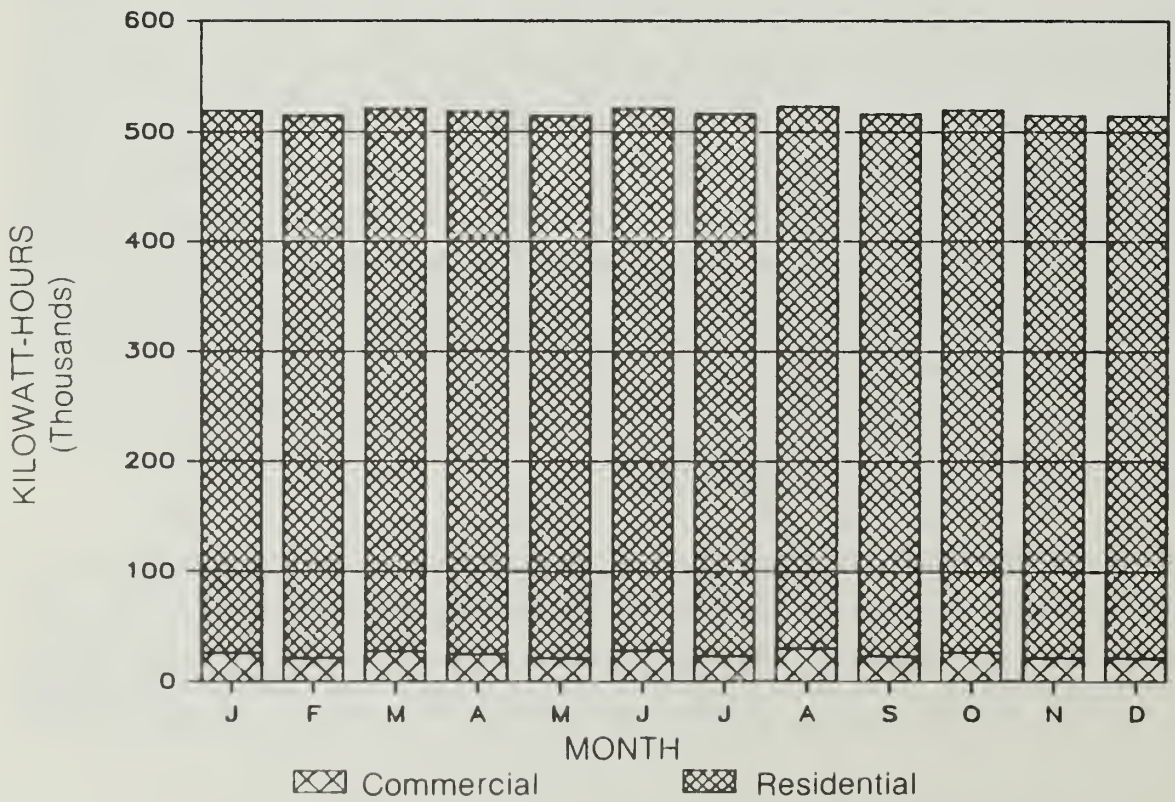
PROJECTED ELECTRICITY CONSUMPTION

FIGURE 33

SOURCE EIP ASSOCIATES



HOURLY ELECTRICAL CONSUMPTION

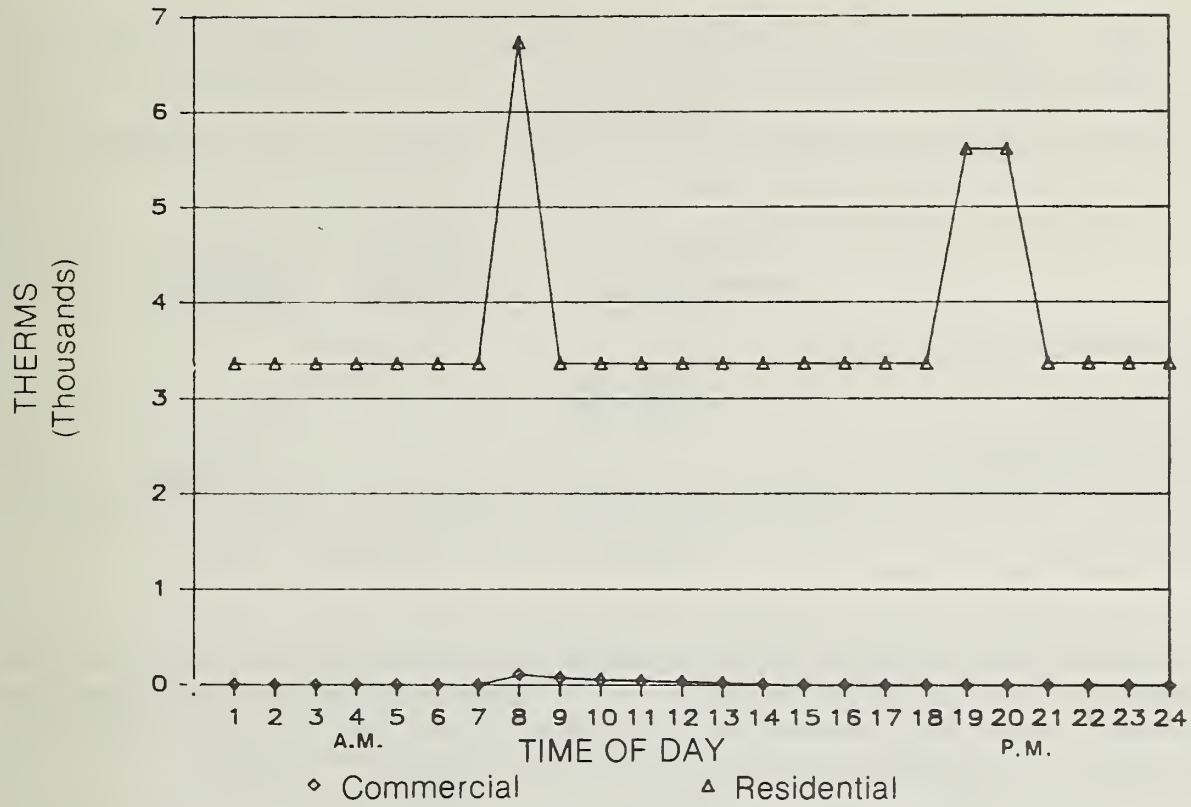


MONTHLY ELECTRICAL CONSUMPTION

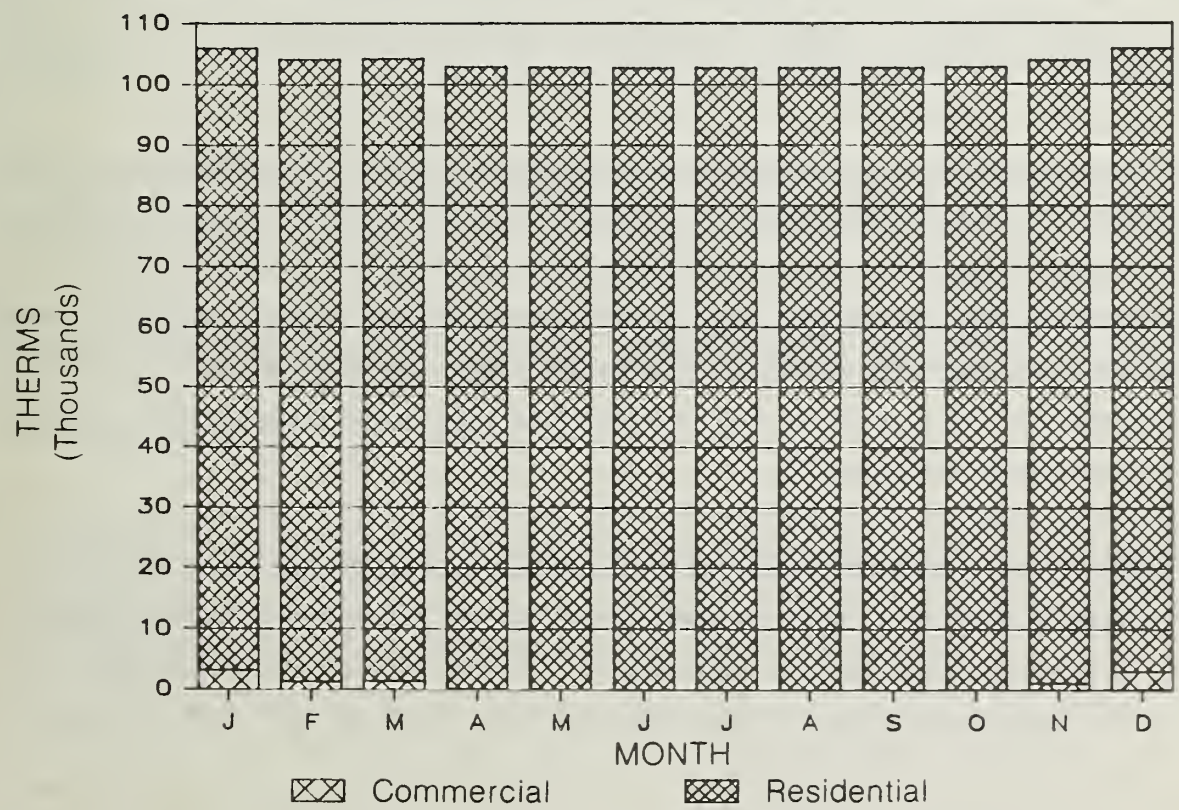
PROJECTED NATURAL GAS CONSUMPTION

FIGURE 34

SOURCE EIP ASSOCIATES



HOURLY NATURAL GAS DEMAND



MONTHLY NATURAL GAS CONSUMPTION

TABLE 18

PROJECT-RELATED ANNUAL TRANSPORTATION ENERGY CONSUMPTION[1]

	Electricity (kilowatt hours)	Gasoline (Millions) (Gallons)	Diesel (Gallons)
44%Auto/Taxi/Jitney/Motorcycle		338,000	
25%BART	2,025,000		
9%Muni Electric	393,000		
23%Regional Bus Systems			51,000
2%SPRR			13,000
Project Total	2,418,000	338,000	64,000

[1]The methods used to calculate these figures are described in detail in the Downtown Plan EIR, EE81.3, certified October 18, 1984, Appendix N and the associated data are contained in Table 6. Calculations are also based on vehicle miles traveled contained in Transportation, Circulation and Parking Impacts section, pages 110 to 138.

and location indicate an increase of about 470 million cubic feet (about five million therms) per year of which 210 cubic feet (about two million therms) per year would be for office uses.[9]

PG&E, in examining its ten-year load growth projections for San Francisco, believes that growth rates of net new office space in the downtown will diminish from the historic figure of 1.5 million square feet per year to between 1 million and 1.2 million square feet per year.[11] Total increased energy demand over the next decade would be approximately 210 million kWh of electricity per year. The PG&E total projection cannot be compared to the projections in the Downtown Plan EIR because they cover different time periods and different economic forecasts.[12]

PG&E plans to meet increased San Francisco energy demands to the year 2000 are in Volume 1, pages IV.G.13-14 of the Downtown Plan EIR, which are hereby incorporated by reference. In summary that material indicates the demand increases in electricity would be met from nuclear sources, oil and gas facilities, hydroelectric and geothermal

facilities, and other sources such as cogeneration, wind and imports. PG&E plans to continue receiving most of its natural gas from Canada and Texas under long-term contracts.

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[1]PG&E Annual Report, San Francisco, CA, 1982.

[2]PG&E Annual Report, San Francisco, CA, 1981.

[3]Existing energy use is based on PG&E customer billings for 1983; at-source thermal energy, given in British thermal units (Btu), is based on information received from PG&E, Technical Service Department, May 10, 1984.

[4]The British thermal unit (Btu) is the quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit at sea level. The term "at-source" means that adjustments have been made in the calculation of the thermal energy equivalent (Btu) for losses in energy that occur during generation, transmission and distribution of the various energy forms as specified in ERCDC, Energy Conservation Design Manual for New Non-Residential Buildings, Energy Conservation and Development Commission, Sacramento, California, 1977, and J.A. Apostolos, W.R. Shoemaker, and E.C. Shirley, Energy and Transportation Systems, California Department of Transportation, Sacramento, California, Project #20-7, Task 8, 1978.

[5]Hannon, B. et al, 1978, "Energy and Labor in the Construction Sector," Science 202:837-8470.

[6]State of California Energy Resources Conservation and Development Commission, Conservation Division, Energy Conservation Design Manual for New Nonresidential Buildings, 1984.

[7]San Francisco Department of City Planning, Downtown Plan Environmental Impact Report (EIR), EE81.3, certified October 18, 1984, Vol. 1, page IV.G.3.

[8]Downtown Plan EIR, Vol. 1, pages IV.G.1-IV.G.17.

[9]Energy consumption factors of 18 kWh sq. ft./year and 11 cu. ft./year (about 12,100 Btu) are based on unpublished data of actual building consumption rates in the Downtown Plan EIR file at the Department of City Planning, 450 McAllister Street, San Francisco, and include base power consumption of the building core (uses covered by Title 24) and power demands of electric office machines (uses not covered by Title 24).

[10]The Downtown Plan EIR uses a consumption rate factor of 18 kWh/sq. ft./year from 1984-1990 and 16 kWh/sq. ft./year from 1990-2000. These different factors are due to Title 24 revisions to reduce building energy budgets. These new standards would be reflected by lower electrical consumption in buildings occupied after 1990.

[11]Ken Austin, Commercial-Industrial Marketing Supervisor, Pacific Gas and Electric Company, letter of March 23, 1984. This letter is available for public review at the Department of City Planning, Office of Environmental Review, 450 McAllister Street, 5th Floor, San Francisco.

[12]PG&E's analysis of a typical office building yielded on annual consumption of about 17 kWh per sq. ft./year, which agrees with the City's estimate within the limits of estimation methodology.

H. CONSTRUCTION NOISE

Ambient noise in the project vicinity is typical of noise levels in downtown San Francisco, which is dominated by vehicular traffic, including trucks, cars, Muni buses and emergency vehicles. Sidewalk noise measurements taken during the weekday p.m. peak commute time show average noise levels of about 69-72 dBA on Market, Mission and Eighth Streets.[1,2] The Downtown Plan EIR indicates ambient noise levels of about 75 dBA along these streets in the vicinity of the project.[3] Measurements made on June 11, 1985 at five locations in the project vicinity are shown in Table 19, page 156. Residences along Market and Mission between Seventh and Ninth and on Eighth between Market and Mission are exposed to these noise levels.

Project construction would take place over about 55 to 65 months, and would temporarily increase noise levels in surrounding areas. Construction noise levels would fluctuate depending on construction phase, equipment type and duration of use, distance between noise source and listener, and presence or absence of barriers between noise source and listener. To estimate probable noise impacts, this analysis assumes typical equipment and construction techniques. Table 20, page 157, shows typical exterior noise levels associated with the different phases of construction (see Appendix D, p. A-36, for a table of typical noise levels found in the everyday environment). Interior noise levels at 50 ft. from the noise source would be about 10 to 15 dBA less than those shown in Table 18. Closed windows would reduce noise levels by about 20 to 25 dBA below those shown in the table.

Construction noise is regulated by the San Francisco Noise Ordinance (Article 29 of the City Police Code). The ordinance requires that sound levels of construction equipment other than impact tools not exceed 80 dBA at a distance of 100 feet from the source. Impact tools (jackhammers, pile drivers, impact wrenches) must have both intake and exhaust muffled to the satisfaction of the Director of Public Works. Section 2908 of the Ordinance prohibits construction work at night, from 8:00 p.m. to 7:00 a.m., if noise would exceed the ambient noise level by five dBA at the project property line, unless a special permit is authorized by the Director of Public Works.

TABLE 19

NOISE MEASUREMENT DATA

Site	Time	Location	L_{10}	L_{50}	L_{90}	L_{eq}[1]	Comments
1	2:54-3:09 p.m.	West side of 8th St. 34 ft. from center of 8th St.	72	67	61	69	Traffic moderate to heavy. Peak bus levels up to 83 dBA
2	3:18-3:33 p.m.	North side of Market St. 43 ft. from center of Market St.	74	67	64	70	"
3	3:45-4:00 p.m.	West side of office building located 45 ft. east of project site	64	61	60	62	Market St. partially shielded by existing structures
4	4:10-4:25 p.m.	220 ft. north of center of Mission St. 60 ft. east of existing apartment bldg. on parking lot	61	58	57	59	Market & 8th Sts. shielded by existing structures
5	4:37-4:52 p.m.	South side of Mission St. 35 ft. from center of Mission St.	76	70	65	72	Traffic moderate to heavy; peak bus levels up to 85 dBA

[1] L_{eq}: The equivalent steady-state sound level, which in a stated period of time would contain the same acoustic energy as the time-varying sound level during the same time period.

Source: Charles M. Salter Associates, June 1985.

TABLE 20

TYPICAL COMMERCIAL/INDUSTRIAL CONSTRUCTION NOISE LEVELS AT 50 FEET FROM THE SOURCE

Construction Phase	Duration of Phase (weeks)[1]	Average Level (dBA)
Ground Clearing	29	84
Excavation	19	89
Foundations[2]	29	78
Erection[2]	90	85
Exterior Finishing	74	89

[1]Phases of construction would overlap.

[2]Time includes 32 weeks of pile driving; noise level is for construction activities other than pile driving (noise levels during pile driving could reach 105 dBA at 50 ft.).

Source: Bolt, Beranek and Newman, December 31, 1971, Noise from Construction Equipment and Home Appliances, vs. Environmental Protection Agency.

The noisiest construction activity would be pile driving, which typically emits about 105 dBA at a distance of 50 feet. Because there would still be residents in the Trinity Apartments within about 50 feet of the pile driving activities, noise levels in these apartments would reach about 90 dBA with windows open and about 80 dBA with windows closed. These levels would be annoying to residents and would interfere with conversation, telephone use and other ordinary residential activities for the duration of pile driving.[4] Residents across Eighth Street, across Mission and on the far side of the parking lot facing Market Street would be exposed to noise levels that would be 3-6 dBA lower, but would still be annoying. Similarly, occupants of office and retail space on Mission, Market and Eighth would be similarly impacted. Pile driving would occur during the day to protect residents during early morning and evening hours from noise. Commercial land uses doing business during daytime hours, and residents at home during the day would be most affected by the noise. Some vibration would be noticed, but would not be as irritating as the noise itself. The noise would be noticeable as far as about 1,500

feet away given line-of-sight contact. The presence of intervening structures would provide shielding and would reduce noise levels at protected locations.

Noise during the remainder of construction activities would be primarily caused by construction equipment and machinery, including impact wrenches. These machines typically emit about 85 dBA at a distance of 50 feet and would result in impacts about 20 dBA lower than those reported for pile driving. Residents on the site and in the buildings with line-of-sight contact with the site across Eighth, across Mission and across the parking lot facing Market Street would be exposed to interior noise levels up to 60 dBA with windows closed. This level of noise would annoy some residents and would interfere with sleep.

Vibrations from the impact during pile driving would be felt in adjacent and nearby buildings. These vibrations have been found to be more disturbing to some people than the high noise levels. Responses by individuals to noise and vibration vary widely, both physical (elevated blood pressure, increased heart rate, changes in breathing and muscle contracts), and psychological effects (stress and reduce work productivity) have been observed in some people. General stress reaction has been observed in humans exposed to brief sounds of 76 dBA.[5] Noise at levels greater than 70 dBA would require workers to close the windows or shout to communicate. Intermittent noises, such as pile driving noise, reduce the perception of control over the environment. This loss of control frequently results in a depressed mood and depressed motivation.[6] Repeated impulse and intermittent sounds of high level appear more likely to disrupt performance, than continuous or steady sounds of comparable level.[7]

The Department of Public Works allows pile driving operations under certain conditions, which may include specifying relatively quiet equipment, predrilling pile holes, and/or specifying hours of operation to reduce the number of people exposed to noise effects. Pile driving would occur over about six weeks for each of the two phases; hammering would occur during a ten-minute period for each pile.

One additional project, 1145 Market Street, is planned in the project area. Should this project's construction schedule coincide with that of the proposed project, the increase in noise due to simultaneous operation of construction equipment on both sites would be about three dBA, which would be a perceptible increase in noise levels. Also, the frequency of noisy events such as operation of pile drivers, impact wrenches and heavy machinery and vehicles would be increased. Should one project be completed and a second begin soon after, noise impacts would be prolonged.

In summary, during the majority of construction activity, noise levels would be expected to be at or below existing levels in the area. There would be times, particularly during the operation of pile drivers or impact wrenches, when noise would interfere with indoor activities in nearby offices, retail stores and residential units.

The project sponsor would require the project contractor to muffle and shield intakes and exhaust, shroud or shield impact tools, and use electric-powered rather than diesel-powered construction equipment, as feasible, so that noise would not exceed limits in the City's Noise Ordinance (Article 29, San Francisco Administrative Code, 1972). Further, the general contractor would construct barriers around the site, and around stationary equipment such as compressors, which would reduce construction noise by as much as five dBA. The general contractor would locate stationary equipment in pit areas or excavated areas because these areas would serve as noise barriers. Also, the construction contractor would predrill holes for piles to minimize noise and vibration from pile driving. The actual pounding from pile driving would occur during a five- to eight-minute span per mile. The project sponsor has agreed to restrict pile driving to hours required by the Department of Public Works. Finally, the construction contractor would limit pile driving activity to result in the least disturbance to neighboring uses. This would require a work permit from the Director of Public Works pursuant to the San Francisco Noise Ordinance Section 2907(c).

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[1] Noise measurements were taken on Tuesday, June 11, 1985 at 2:54, 3:18, 3:45, 4:10 and 4:37 p.m. by Charles Salter Associates, Inc. Measurement locations were Market, Mission and Eighth Streets. (see Table 19, page 156)

[2]Decibel: (dB) A logarithmic unit of sound energy intensity. Sound waves, traveling outward from a source, exert a force known as sound pressure level (commonly called "sound level"), measured in decibels.

DBA: Decibel corrected for the variation in frequency response to the typical human ear at commonly encountered noise levels.

L_{dn}: An averaged sound level measurement, based on human reaction to cumulative noise exposure over a 24-hour period, which takes into account the greater annoyance of nighttime noises. Noise between 10 p.m. and 7 a.m. is weighted 10 dBA higher than daytime noise.

[3]San Francisco Department of City Planning, Downtown Plan Environmental Impact Report (EIR), EE81.3, certified October 18, 1984, Volume 1, pages IV.J.1-19, particularly Table IV.J.2, pages IVJ. 9-10.

[4]See Appendix D, page A-33 for comparison of noise levels of familiar noise sources.

[5]The Central Institute for the Deaf, Effects of Noise on People, U.S. EPA, 1971.

[6]Sheldon Cohen, et al., "Cardiovascular and Behavioral Effects of Community Noise," American Scientist, Volume 69, October 1981.

[7]National Institure for Occupational Safety and Health, Occupational Exposure to Noise, U.S. Department of Health, Education and Welfare, 1972.

I. HISTORIC AND CULTURAL RESOURCES

The proposed project would not affect known archaeological sites or historic/architecturally significant structures. The project site is situated within previous marshlands. While historic marshland areas have been sites of potential archaeological significance, excavation is not proposed below 50 feet. As such, it is doubtful that prehistoric archaeological resources would be encountered. The US Coast survey map indicates the area was vacant until the Central Park was established in 1884, and there is a low possibility of historical archaeological resources.[1]

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[1] Christian Gerike, Assistant Coordinator, California Archaeological Inventory Northwest Information Center, letter of November 6, 1985, and telephone message of October 20, 1986 from Christian Gerike to Sally Maxwell, Office of Environmental Review, verifying that the November, 1985 recommendation remained appropriate. A copy of the letter and a note to the file relating to the telephone message are on file at the San Francisco Department of City Planning, 450 McAllister Street, Sixth Floor, San Francisco, CA.

J. EMPLOYMENT, POPULATION AND HOUSING FACTORS

1. Employment

a. Employment Displacement

The project would displace eight businesses existing on-site. Six businesses would be displaced as part of Phase One, with the remainder displaced at the initiation of Phase Two of the construction period. Businesses on-site currently employ about 34 people, 25 of which have been considered as part of the base case for the impacts analysis. The sponsor has indicated that owners of these businesses do not yet have definite relocation plans. Further, the sponsor has not developed a relocation assistance program or an onsite accommodation program.

b. Project-Generated Employment

At full operation the proposed project would provide an estimated 677 net new permanent jobs for office, retail, parking and janitorial maintenance functions. These would include 185 office workers (at one worker per 268 square feet of net new office space), 370 retail workers (at one worker per 350 square feet of net new retail space), and 122 janitorial/ service workers (at one worker per 12,000 square feet of net new space).[1] Because specific tenants are unknown at this time the projected total number of employees was derived on the assumption of an average number of square feet per employee, by employment type.

Secondary employment and income would result from permanent project employment. Through the multiplier effect, each employee would generate additional employment through expenditures for goods and services. On the assumption that the new jobs on site would be primarily in the finance, insurance, and real estate (FIRE) sector, up to 841 additional jobs in other sectors of the Bay Area economy would result from the project.[2] Thus, the total number of net new direct and indirect employment generated as a result of the project would be 1,518 (677 net direct jobs and 841 indirect jobs).

Project construction would require 2,266 person-years of labor, equal to 453 construction jobs over a 5 year period. Approximately 3,966 additional person years of employment, equal to 793 jobs would be generated in the Bay Area as a result of the multiplier effect of project construction.[3]

c. Cumulative Employment

Employment in the C-3 District has been forecast for the year 2000 in the Downtown Plan EIR.[4] The employment forecast incorporates changes in types of businesses locating in the C-3 District, intensity of use of space, and local, national, and international economic trends. A total of 372,000 jobs in the C-3 District is forecast for the year 2000, an increase of 91,200 jobs over the 1984 level. The proposed project would provide approximately 672 net new jobs in the year 2000 (based on projected employee densities), or approximately 0.7% of total year 2000 jobs in the C-3 District.

2. Population and Housing

354 of the 358 rental units on site are currently occupied. The sponsor would offer all tenants the opportunity to transfer to a unit in the new building at the same rental rate as stipulated in the rental lease at time of transfer. In most cases current monthly rent is $475.00. Existing dwelling units average 411 gsf, while project units would increase average unit area by 77%, to 726 gsf. Residents in existing studio units would experience a change in living environment should they transfer to the proposed apartments.[5] Since the project site is in a rent control district, rent increases for transferring residents would be in accordance with procedures established by the Rent Control Stabilization Board.

Construction would proceed in two phases so as to alleviate short term displacement impacts. During Phase One 286 residential units would be preserved on site. The sponsor would make available any vacant space in these units to residents of the 72 units that would be demolished during this phase. The two residential towers fronting on Mission Street would be completed during Phase One. At that time all tenants of existing rental units could transfer to rental units in the proposed project.

San Francisco Office Affordable Housing Production Program (OAHPP) requires housing to be provided to offset the demand created by office development for all projects including the net addition of more than 50,000 gross square feet of office space. On August 18, 1985, the City Planning Commission approved a proposed OAHPP Ordinance which estimates that a demand for 0.386 housing units is created for each 1,000 gross square feet of net new office space built.[6] Under these assumptions, the proposed project

would not generate a local housing demand because the amount of net new office space (49,600 gsf) would be less than 50,000 gsf.

Section 124(f) of the City Planning Code allows additional square footage above that permitted by the base FAR for construction of dwellings on the project site, affordable for 20 years to households whose incomes are within 150 percent of the median income as defined in the Code, in accordance with Conditional Use procedures and criteria as provided in Section 303 of the Code. These units, comprising 46.3% of the total units proposed as part of the project, would be subject to the affordability provisions of Section 124(f).

Monthly rental rates of units occupied by new residents would be approximately $600 to $1,000.[7] Existing residents on the project site who transfer to new project units would pay the rental rate stipulated in the rental lease at the time of transfer.

In 1985, approximately 880 rental units were added to the San Francisco housing stock. The proposed project would represent a net increase of 1,641 units on the project site, equal to a 86% increase over the number of rental units constructed in that year in San Francisco.

a. Housing Affordability

Pursuant to the California Environmental Quality Act (CEQA) Guidelines, Section 15149a, discussion of housing affordability for new office workers is incorporated by reference from the Second Street Square Final EIR, 82.591E, certified January 12, 1984 (pages 53-55). Briefly, while a survey of occupants of a building comparable to the project would yield some housing affordability data, accurate identification of housing affordability characteristics for persons entering the San Francisco housing market as a result of a new office project is virtually impossible. The problems with making such a determination include: i) the identify and financial resources of persons employed in the newly constructed space; ii) persons working in the newly constructed space (in old or newly created jobs) may not be newly employed in San Francisco; and iii) persons newly employed in San Francisco in newly created jobs may not have obtained their job as a result of new office development. Even if the number of new employees and their

preferences for housing were known, a household's ability to pay for housing depends on a variety of factors in addition to individual income, such as family composition and housing preferences.[8]

3. Residence Patterns and Housing

Employment growth and building development in downtown San Francisco will result in more employees working and living in the City. Over time, more existing residents will take San Francisco jobs and others who take San Francisco jobs will move into the City.

The future residence patterns described below are quantified and provide the basis for the qualitative conclusions about the housing market implications of downtown growth described in the following subsection. Because the residence patterns can be quantified for both cumuative development and for the increment of growth represented by the project, this allows an estimate of the project's contribution to the impacts of cumulative growth.

Downtown Plan Forecast as Cumulative Context. Forecasts of residence patterns in the year 2000 were prepared for the Downtown Plan EIR.[9] These forecasts incorporate future housing, labor force, and employment patterns in San Francisco and throughout the region and consider changing demographic, housing market, and transportation factors.

Growth expected throughout the region was included in the Downtown Plan EIR analysis of the housing impacts of C-3 District growth. The approach was to use ABAG's regional employment forecasts to describe the growth that is expected to occur by the year 2000. These forecasts incorporate the plans and projects that are expected to be completed by 2000 as well as land use policies from all Bay Area communities. They also include future employment in projects as yet not conceived or proposed. Further, they account for the net result of decreases in employment as firms go out of business or cut back on operations and increases in employment accommodated by new development. They also account for changes in the use of existing space.[10]

This approach provides a cumulative employment context that is consistent with forecasts of expected future housing and labor force throughout the region. To assess housing

impacts, it is important that expected growth of employment be analyzed within the context of expected growth of the housing supply and of the region's workforce for consistent time periods. The Downtown Plan forecast approach to cumulative impact assessment recognizes that growth besides that in the C-3 District (employment growth in greater downtown San Francisco, the rest of the City and the region) will also be competing for labor and housing in San Francisco and the rest of the region.

According to the Downtown Plan EIR forecasts, approximately 189,000 C-3 District workers would be living in San Francisco in 2000. This represents an increase of 30,000 residents employed in the C-3 District over the 159,000 estimated for 1984, a 19% increase.[11] Relatively more employed San Franciscans would be employed in the C-3 District; The percentage (employed San Franciscans holding C-3 District jobs) would increase from 45% in 1984 to 47.5% in 2000. Relatively fewer C-3 District jobs would be held by San Franciscans. The percentage (C-3 District jobs held by San Franciscans) would decline from 55.5% in 1984 to 50.2% in 2000. These changes would be the result of cumulative development and employment growth in the C-3 District between 1984 and 2000.

It is important to understand the difference between the two percentages above. In each case, the same estimate of the number of jobs held by San Francisco residents is compared to an estimate for a larger group: to all employed residents of the City in the first instance and to all C-3 District employment in the second. The percentages are different since the number of employed residents is different from the number of jobs. These percentages both describe the same employment situation, but from different perspectives. The percentage of jobs held by City residents is used more often, primarily for transportation analysis. The percentage of City residents who work in downtown San Francisco is used less often. This latter perspective is a more direct measure of the role of downtown jobs in employing San Francisco's residents.

The residence patterns of future occupants of the proposed project can be estimated using information developed in the Downtown Plan EIR analysis. This approach assumes that employment densities for the building and residence patterns for those working in the building would reflect the average conditions for all similar buildings and occupants in the

C-3 District in 2000. According to this approach, there would be about 760 people employed in the project who would live in San Francisco. The project would account for about 0.4 percent of all San Franciscans employed in the C-3 District in 2000 under the forecast contained in the Downtown Plan EIR.[12]

Housing Market Implications for San Francisco.[13] There is a complicated series of interactions between employment growth and the housing market impacts of that growth. Throughout this process, adaptations or changes in conditions can be identified, but cannot be solely attributed to employment growth.

With continued employment growth there would be additional demand for San Francisco housing from people with strong preferences for living in the City and with the ability and willingness to pay for housing. This demand would be added to an otherwise competitive market with relatively high prices/rents.

At the same time, additional housing will be produced in San Francisco. There would be more additional supply relative to additional demand in the future than in the past. The primary reason is that housing market factors together with local policies and redevelopment programs are expected to support a larger addition of housing in the city than occurred in the past two decades. Nevertheless, San Francisco is unlikely to accommodate all of the households that would otherwise choose to live in the City. This is explained by the City's role as the employment center for a large region, by the limited land availability in the City, and by the higher costs of producing housing in San Francisco.

Downtown employment and employment growth will continue to be among the factors supporting a competitive housing market. It is unlikely that changes in housing demand due to downtown growth alone would be the cause of significant changes in prices and rents. Future housing prices and rents will depend on other factors besides downtown employment growth (such as interest rates and local land use policies and development costs throughout the region).

Not all of the additional downtown workers would live in San Francisco, however, some would choose to do so. Many of the additional workers would be wiling to pay higher prices for City housing to save on the time and cost of commuting from a more outlying location. Many of the additional workers preferring to live in San Francisco would be able to pay more for housing than some current residents.

Those workers who choose to live in the City would compete for the existing supply of housing. Those with greater financial resources would support the production of housing by the private market. Those with less financial resources would add to the competition for the stock of housing available at prices and rents below those needed for new construction. To the extent that prices/rents remain below this threshold, the supply of these types of units would not be expanded. Instead, prices/rents of existing units would be somewhat higher, occupancies would be higher (more people per unit because children live at home longer, more people live together, etc., and/or lower vacancies), and there would be pressure to upgrade the existing stock.

Competitive market pressures would be greatest for rental and for-sale housing priced below average, particularly for units below the threshold prices/rents for new housing production. Increased competition in an already competitive market, the relatively high threshold for new construction, and the large pool of consumers (not just downtown workers) with preferences for the older housing stock in San Francisco, all would result in more housing consumers seeking these types of units. The purchase and upgrading of lower-cost older housing is the first step in the process of neighborhood change known as gentrification. Often, existing lower-income residents can be "priced out" of their hosuing in the upgrading process.

Higher prices and rents, particularly for the relatively lower-cost housing in older neighborhoods, would have various implications over time, for those in the housing market as well as for other existing residents. Some people would decide not to move into the City and some existing residents would move out of the City for more acceptable housing elsewhere. Many individuals would continue to live in San Francisco and pay higher prices/rents for the same City housing. Still others, those unable or unwilling to pay more, would accept City housing which does not fully meet their preferences or needs.

Those with the fewest resources to pay for housing (low and some moderate income households) would bear the greatest share of the negative impacts of a housing market with higher prices/rents. These impacts vary - households could move to less satisfactory housing in the City or elsewhere, or more household members could have to contribute to housing expenditures (either within the existing household or because people decide to live together to combine their incomes). It is more likely that the poor will continue to live in the City, although in more crowded or otherwise inadequate housing, than move outside the City. And finally, owners of existing units would benefit to the extent that their housing appreciates. It is not possible to quantify how many households would be affected in each of these ways.

This scenario of future housing market conditions in San Francisco implies that housing affordability will continue to be a problem for many of the City's households. The additional demand due to downtown employment growth would add to a future housing market situation in which many households, particularly those with incomes below the threshold needed to support new production, are expected to be paying a larger percentage of their incomes for housing or accepting less housing services than in the past.

Generally, those households with fewer financial resoures available to pay for housing would make the most sacrifices in adapting to more competitive market conditions. They have less ability to compete for housing and fewer housing options. San Francisco currently has and will continue to attract a large number of persons that will be faced with these difficulties in securing housing. They include renters, younger persons, those holding entry level jobs, the elderly and others on fixed incomes, newly arrived immigrants, as well as other poor and unemployed persons.

This proposed residential project, as part of the future pattern of downtown office development, would contribute to the supply of housing units downtown and would help to mitigate housing impacts from downtown office development.

Regional Perspective on Residence Patterns and Housing

The residence patterns of San Francisco workers can also be considered from a regional perspective. In fact, future labor force, housing, and employment throughout the region were important factors in the Downtown Plan EIR residence patterns forecasts. Expected trends in labor force participation, workers per household, housing production, and employment growth provided the future regional context in which the Downtown Plan EIR forecasts were prepared.

Table 21 presents residence patterns forecasts for C-3 District workers as prepared for the Downtown Plan EIR Residence forecasts are also shown as percentages of the total employed population in each part of the region, as forecast by the Association of Bay Area Governments (ABAG).[14]

The Downtown Plan EIR 1984 estimates and forecasts for 2000 (first three columns on the left) indicate that the largest number of C-3 District workers would live in San Francisco, followed by the East Bay, the Peninsula, and the North Bay. The largest increase of C-3 District workers would be for those living in the East Bay, followed by San Francisco, the Peninsula and the North Bay. The next three columns compare the Downtown Plan residence patterns forecasts for C-3 District workers to ABAG's forecasts of total employed residents throughout the region. C-3 District workers would represent a relatively large share of all employed San Franciscans and relatively smaller proportions of the labor force in other Bay Area counties. Comparing 1984 and 2000, there would not be major changes in the C-3 District percentages of the labor force in each area.

Because regional housing supply assumptions, as well as labor force and employment trends, are the basis for the forecasts, the above observation that the changes over time in the downtown worker percentages of the region's employed population in each area would not be large indicates that C-3 District/downtown workers would not require much larger shares of the region's housing in the future than they do now. In the future, the

TABLE 21

REGIONAL PERSPECTIVE ON RESIDENCE PATTERNS

	Downtown Plan Forecast of Residence Patterns of C-3 District Workers[1]					
	Number of Workers			Percent of Total Employed Population in Each Part of Region[2]		
	Total 1984	Total 2000	Change 1984-2000	Total 1984	Total 2000	Change 1984-2000
San Francisco	159,000	189,000	30,000	45%	47%	61%
East Bay	73,000	110,000	37,000	7	8	10
Peninsula	35,000	48,000	13,000	3	4	4
North Bay	19,000	29,000	10,000	7	7	8
TOTAL	286,000[3]	376,000[3]	90,000	11%	11%	11%

[1] Includes permanent employment and annual average construction employment. Incorporates changes in employment for office, retail, hotel and other uses.

[2] Forecasts of employed residents in Bay Area counties from ABAG, Projections '83. ABAG presents forecasts of employed residents for 1985 and 2000. For comparability with the cumulative analyses (which use 1984 as the base year), ABAG's 1980 to 1985 projections were prorated over the five-year period to estimate 1984 conditions for the region.

[3] Forecasts for growth under the Downtown Plan include some workers who would live outside the Bay Area. This is a small number and is not shown here.

Source: Recht Hausrath & Associates, EIP Associates.

relationship between C-3 District/downtown workers and other workers competing for housing in the region would be relatively similar to the conditions in 1984.

As part of total regional employment growth in the future, increases in downtown employment can be viewed as contributing to regional housing demand. A strong regional economy has and will continue to be a factor supporting a competitive regional housing market with relatively high housing prices and rents. By itself, downtown growth would make only a small difference in the region's housing market outside of San Francisco. If downtown growth did not occur and all other employment growth and housing market factors remained as forecast, it is unlikely that the Bay Area's future housing market would be very different from what would otherwise occur with downtown growth.

All other things being equal, regional employment growth would mean higher prices and rents for housing than would otherwise be the case in the future. It would also mean lower housing services (less acceptable housing conditions at the same, or higher, price) for some of the region's households. How much difference (higher prices/rents or lower services) depends on other housing market factors besides employment growth (interest rates, land use policies, other demand factors, etc.). It also depends on the amount of employment growth. Downtown employment growth alone would have less impact than total regional growth.

The housing market impacts of employment growth are not uniform throughout the region. Generally, there would be more effects in nearby communities than in those further from the location of job growth. The main reason is that, all other things being equal, households have a preference for residential locations closer to places of work and can pay more for housing at a closer location because they are not paying the higher transportation costs they would otherwise pay at a more distant place.

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[1] Office employment derived from: San Francisco Department of City Planning, Revised Guidelines for Administering the Housing Requirements Placed on Office Development under OAHPP, December 7, 1981. Retail and maintenance employment derived from analysis in: 101 Montgomery Street, FEIR, certified May 7, 1981, page 77.

[2]Indirect employment projections are based A 1980 Hybrid for the San Francisco Input-Output Model, Bay Region, Association of Bay Area Governments, April 1984. The multipliers used (2.25 was used for FIRE sector jobs, .71 for retail workers, and 1.33 for maintenance jobs) are average of the Type I and Type II employment multipliers contained in that model.

[3]Ibid. Based on multiplier factor of 1.75 for construction.

[4]San Francisco Department of City Planning, Downtown Plan Environmental Impact Report (EIR), EE81.3, certified October 18, 1984, Vol. 1 page IV.D.67.

[5]1,189 units in the proposed project are studio apartments, 500 are one bedroom units, and 310 are two bedroom units. Of 358 units in the existing building, 353 are studios and 5 are one bedroom apartments.

[6]City and County of San Francisco, Board of Supervisors, Ordinance No. 358-85 Office Affordable Housing Production Program, effective August 18, 1985.

[7]Daj Oberg, legal assistant, Knox and Cincotta, oral communication, July 23, 1986.

[8]Questor Associates, Feasibility of Performing a Housing Affordability Analysis, June 15, 1982. This study is available for public review at the San Francisco Department of City Planning, 450 McAllister Street, 5th floor.

[9]For a description of existing and forecast future residence patterns of C-3 District workers see Downtown Plan EIR, Vol. 1, Section IV.D, Residence Patterns and Housing. Also see Downtown Plan EIR, Vol. 3, Summary of Comments and Responses, pages C&R-D.82 - C&R-D.83 (which is hereby incorporated by reference pursuant to State CEQA Guidelines) for a discussion of the role of the residence patterns forecasts in analyzing future housing market conditions. Information provided by project sponsor.

[10]Association of Bay Area Governments, Projections '83. This report presents forecasts from 1980 to 2000 of population, employment, households, and employed residents for each of the nine Bay Area counties.

[11]Downtown Plan EIR, Vol. 1 page IV.D.67.

[12]In order to ensure consistency with the cumulative transportation analysis and to provide information on regionwide impacts, this section does not use the OAHPP and 101 Montgomery formulas for estimating the number of workers who would live in San Francisco. These formulas only provide estimates of office workers living in San Francisco; they do not include factors for estimating workers living in other parts of the region.

[13]This subsection presents a summary of the discussion in the Downtown Plan EIR, Vol. 3, pages C&R-D.83 - C&R-D.94, (see also, Vol. 1, pages IV.D.77 - IV.D.82 and pages 1.1 - 1.8), which is hereby incorporated by reference pursuant to State CEQA Guidelines, Section 15150.

[14]Association of Bay Area Governments, Projections 1983. This report presents forecasts from 1980 to 2000 of population, employment, households and employed residents for each of the nine Bay Area counties.

K. GROWTH INDUCEMENT

The project would include about 1,450,735 gsf (1,999 units) of residential space (a net increase of 1,303,585 gsf (1,641 units)), 49,600 gross square feet (gsf) of office space (a net increase of about 49,600 gsf) and about 132,500 square feet of retail space (a net increase of about 122,050 gsf). Employment at the site would increase from about 25 to about 702 persons, an increase of about 677. It is not known who would occupy the proposed project, but it could include tenants currently on the site, tenants expanding or relocating from other San Francisco locations, tenants relocating from outside San Francisco and firms new to the Bay Area. The increase in employment at the project site, therefore, would not necessarily represent employment that is new to San Francisco. If the project were fully leased, however, and the office space of the project did not create permanent vacancies in other San Francisco office buildings, total employment in San Francisco would increase by about 677 jobs due to the project. Approximately 841 additional jobs would be supported indirectly in the San Francisco Bay Area through the multiplier effect (see Chapter IV. J., Housing and Employment Factors, page 162).

If marketed successfully, the project, together with other planned development, could have growth-inducing effects by demonstrating a market for residential space in this area. This could thereby encourage similar development on lots (including smaller lots assembled for development) currently occupied by low-rise or mid-rise buildings containing business support services. The demand would indirectly reflect the trend of growth in service sector and headquarters office activities and employment in San Francisco. Increases in downtown office space and employment would contribute to continued growth of local and regional markets for housing, goods and services. These effects would be less extensive were the vacancy rate for office space to rise. Should this occur, projected increases in downtown employment would be less and the growth in demand for goods, services and housing would be lower.

The housing demand generated as a result of office and retail land uses would be accommodated by residential units to be constructed as part of the project. In addition to satisfying housing demand for employment resulting from onsite uses, the project would provide 1,641 additional units for individuals who work in the City. The project site is accessible to individuals employed in the downtown area.

It is expected that some downtown workers would want to live in San Francisco. Employment growth, however, would not be reflected directly in increases in demand for housing and city services to residents, as some new jobs would be held by individuals who already live and work in the City; who live in the City but previously either did not work, or worked outside the City; who live in surrounding communities; or by those unable to afford or locate housing in the City. New downtown workers would also increase demand for housing in other parts of the Bay Area.

Any net increase in employment downtown would increase the demand for retail goods and services in the area. The project would intensify this demand by increasing the amount of employment on the site and by displacing more retail shops and services than it would replace.

Increases in employment in an area accessible to downtown would also increase demand for business services, to the extent that the expanded space would not be occupied by firms providing those services. In response, demand would increase for existing space and possibly for further new development.

The project would be built in a developed urban area, and no expansion to the municipal infrastructure not already under consideration would be required to accommodate new development and increased employment due to, or induced by, the project.

L. CUMULATIVE COMMUNITY SERVICES

The proposed project would contribute to the cumulative demand for community services in the downtown. Impacts anticipated from cumulative downtown development have been analyzed in the Downtown Plan EIR and no significant impacts have been identified. The community service setting and impacts discussion from the Downtown Plan EIR is summarized below and incorporated by reference herein.[1]

A sewer system is being built pursuant to the City's Clean Water Program. The system is intended to handle combined volumes of sewage and rainwater runoff. Since the capacity of the system is designed to handle rainwater flows (which can be 50 times the volume of regular sewage) additional development citywide would not affect operation of the sewer system.

About 23,000 (19%) of the City's 123,000 annually reported criminal incidents occur in the C-3 District. This number is expected to increase to approximately 24,500 by the year 2000. The percentage increase in C-3 District criminal incidents would be less than the percentage increase in new building area since (1) office space has a lower crime rate than light industrial and parking uses; (2) newer structures tend to have better security systems; and (3) greater population density tends to increase area security. Based on these projections, an increased demand for approximately 26 Police Department personnel (about 1% of the existing force) is anticipated through the year 2000. The Police Department has no plans for future major capital expenditures (such as a new police station) nor would any be needed to meet the demands identified in the C-3 District.

About 7,600 (21%) of the City's 36,000 annual fire and non-fire incidents occur in the C-3 District. This is expected to increase to approximately 7,800 by the year 2000. Based on these projections, all Fire Department task units would continue to operate within their annual service limits through the year 2000. Two additional building inspectors would be required to maintain annual inspection of all downtown highrises.

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[1] San Francisco Department of City Planning, Downtown Plan Environmental Impact Report (EIR), EE81.3, certified Oct. 18, 1984, Vol. 1, pages IV.F.6-IV.F.8; IV.F.15-IV.F.19; Vol. 3, p. F.6; Vol. 2, Appendices pp. A-6 and K.10-K.13.

V. MITIGATION MEASURES THAT WOULD MINIMIZE THE POTENTIAL IMPACTS OF THE PROJECT

In the course of project planning and design, measures have been identified that would reduce or eliminate potential environmental impacts of the proposed project. Some of these measures have been or would be adopted and implemented by the project sponsor, project architects or contractors and are proposed as part of the project. Some measures are under consideration and others have been rejected. Implementation of some measures may be the responsibility of public agencies.

Each mitigation measure and its status is discussed below. Where a measure has not been included in the project, the reasons for this are discussed. Any or all of the measures not included in the project could be required by the City Planning Commission to be included as part of the project as conditions of approval if the project is approved.

VISUAL QUALITY/URBAN DESIGN

Measures Proposed to be Included in the Project

- To reduce obtrusive light or glare, the project sponsor would not use any mirrored glass on the building.

- The project would include ground-floor commercial and retail uses fronting on Mission and Eighth Streets and a patterned sidewalk design to maintain pedestrian interest. The upper cornice line of the building base would be scaled to the height of neighboring buildings to provide visual continuity.

- The project would include landscape elements, such as mature street trees on Mission and Eighth Streets and planters at the main building entrances. Landscaping plans

would be implemented in consultation with the Departments of City Planning and Public Works in order to maintain adequate sidewalk width for pedestrians.

TRANSPORTATION

Measures Proposed to be Included in the Project

- Within a full year of occupancy of the project, the sponsor would conduct a survey, in accordance with methodology approved by the Department of City Planning, to assess actual trip generation patterns of project occupants and actual pick-up and drop-off areas for carpools and vanpools. The project sponsor would make this survey available to the Department of City Planning. This measure would provide needed information to aid in transportation planning within the City.

- The project sponsor would, in consultation with the Municipal Railway, install eyebolts for Muni trolley wires on the proposed building wherever necessary or agree to waive the right to refuse the attachment of eyebolts to the proposed buildings if such attachment is done at City expense.

- Building directories and signs for the service entrances and elevators would be provided in each building as specified under Resolution No. 9286.

- The project would include in the parking structures warning devices (lighted signs and noise emitting devices) to alert pedestrians to vehicles exiting the structures onto Mission, Stevenson and Jessie Streets.

- During the construction period, construction truck movement would be permitted only between 9:00 a.m. and 3:30 p.m. to minimize peak-hour traffic conflicts and to accommodate queuing of Muni buses prior to peak hour. The project sponsor and construction contractor would meet with the Traffic Engineering Division of the Bureau of Engineering of the Department of Public Works, the Fire Department, Muni and the Department of City Planning to determine feasible traffic mitigation measures to reduce traffic congestion during construction of this project and other nearby projects. To minimize cumulative traffic impacts caused by lane closures during construction, the project sponsor would coordinate with construction

contractors for any concurrent nearby projects that are planned for construction or later become known.

- Secure, safe bicycle storage facilities would be provided relative to the demand generated by project commuters and short-term visitors.

- Should Ordinance 224-81, which requires the sponsor to contribute funds for maintaining and augmenting transportation service in an amount proportional to the demand created by the project (TDIF), be declared invalid by the courts (in event of an appeal of the Superior Court Decision of September 27, 1984), the project sponsor would agree to participate in any subsequent equivalent measures adopted in lieu thereof that are equitable and legal, which the City adopts to apply to all developments that are similarly situated.

- The placement of paving, landscaping or structures in the sidewalk area (subject to City approval) would be done in such a way as to minimize interference with pedestrian traffic.

Measures Under Consideration by the Project Sponsor

- The entrance to the parking area would be designed with adequate off-street storage to minimize potential blockage of Eighth Street. Parking control equipment would be set back one to two car lengths from Eighth Street. Approximately 2 to 3 lanes would be provided for both entry and exit to accommodate the size of garage. Additionally, providing a second garage access to either Jessie or Stevenson Streets would be desirable to improve access and egress to the garage.

- Use of Jessie and Stevenson Streets as pedestrian access/linkages to the site would disperse pedestrian around the site avoiding potential concentrations improving pedestrian circulation around the site.

- An underground connection to the BART mezzanine would improve transit accessibility to the project site.

Measures That Could Be Implemented by Public Agencies

- The City could adopt and implement the transportation improvements described in the Downtown Plan. Cumulative transportation impacts within San Francisco would be reduced by the improvements and, to the extent that San Francisco can influence transportation improvements recommended in the Plan for areas outside the City, adoption of the Plan will reduce regional cumulative impacts caused by downtown growth.

- Should the Downtown Plan not be implemented by the Board of Supervisors and the Mayor, the City could act to implement the transportation mitigations described in Vol. 1, Section V.E., Mitigation, pages V.E.4-28, in the Downtown Plan EIR. These measures are similar or identical to those in the Downtown Plan and include, in summary, measures to construct and maintain rail rapid transit lines from downtown San Francisco to suburban corridors and major non-downtown centers in San Francisco; measures to fund Vehicle Acquisition Plans for San Francisco and regional transit agencies to expand existing non-rail transit service; provide exclusive transit lanes on City streets and on freeways; reduce incentives to drive by reducing automobile capacities of bridges and highways in certain circumstances and by discouraging long-term parking; measures to encourage carpools, vanpools, and bicycle use; and measures to improve pedestrian circulation within downtown San Francisco.[1]

- Some of the Implementing Actions would require approval by decision makers outside the City and County of San Francisco; many of the measures would require action by City agencies other than the City Planning Commission, such as the San Francisco Public Utilities Commission and/or Board of Supervisors. These measures are systemwide measures that must be implemented by public agencies. Other than project-specific measures the relevant transportation mitigation measures described above as part of the project or such as the Transit Development Impact Fee assessment required by San Francisco Ordinance 224-81 that contribute indirectly to implementation of these systemwide measures, it is not appropriate to impose mitigation at system-wide levels on individual projects.

- Pacific Gas and Electric Company (PG&E) could coordinate work schedules with other utilities requiring trenching, so that street disruption would take place during weekends and off-peak hours. This should be done through the San Francisco Committee for Utility Liaison on Construction and Other Projects (CULCOP). In-street utilities should be installed at the same time as the street is opened for construction of the project to minimize street disruption.

AIR QUALITY

Measures Proposed to Be Included in the Project

- The project sponsor would implement the mitigation measure identified for housing impacts (see page 184) to also mitigate air quality impacts. Improving the balance of jobs and housing in San Francisco would reduce long-distance home-to-work travel, and would reduce local and regional emissions of all pollutants.

- The project sponsor would require the general contractor to sprinkle demolition sites with water continually during demolition activity; sprinkle unpaved construction areas with water at least twice per day; cover stockpiles of soil, sand, and other such material; cover trucks hauling debris, soil, sand, or other such material; and sweep streets surrounding demolition and construction sites at least once per day to reduce TSP emissions. The project sponsor would require the general contractor to maintain and operate construction equipment to minimize exhaust emissions of TSP and other pollutants, by such means as a prohibition on idling motors when equipment is not in use or when trucks are waiting in queues, and implementation of specific maintenance programs (to reduce emissions) for equipment that would be in frequent use for much of a construction period.

Measures That Could Be Implemented by Public Agencies

- Appropriate agencies could implement mitigation measures identified for traffic impacts (see pages 179 to 182) to also mitigate air quality impacts. Increasing roadway capacity (where feasible and cost effective), reducing vehicular traffic through increased ridesharing (carpool, vanpool and transit), and implementing flexible and/or staggered work hours would reduce local and regional emissions of all pollutants.

ENERGY

Measures Under Consideration by the Project Sponsor

- The project would incorporate energy mitigation measures such as passive solar features, individual fan units on each floor, computerized energy management, and fluorescent lighting (wattmisers) with switching from four bulbs per fixture to two. Final decisions would be made on the basis of life-cycle costing and compatibility with the overall design; a separate report would be prepared and made available to the Department of City Planning prior to the application for the building permit which would explain the decisions regarding which energy conservation features would be included in the final design.

- The project would include recycling facilities so that residents could recycle glass, metal and newsprint.

- The project would include white paper recycling for office functions.

CONSTRUCTION NOISE

Measures Proposed to be Included in the Project

- The construction contract would require that the project contractor muffle and shield intakes and exhaust, shroud or shield impact tools, and use electric-powered rather than diesel-powered construction equipment, as feasible, so that noise would not exceed limits in the City's Noise Ordinance (Article 29, San Francisco Administrative Code, 1972).

- The general contractor would construct barriers around the site, and around stationary equipment such as compressors, which would reduce construction noise by as much as five dBA. The general contractor would locate stationary equipment in pit areas or excavated areas because these areas would serve as noise barriers.

- The project sponsor would require that the construction contractor predrill holes for piles to minimize noise and vibration from pile driving. The actual pounding from pile driving would occur during a five- to eight-minute span per mile. The project sponsor has agreed to restrict pile driving to hours required by the Department of Public Works.

- The project sponsor would require that the construction contractor limit pile driving activity to result in the least disturbance to neighboring uses. This would require a work permit from the Director of Public Works pursuant to the San Francisco Noise Ordinance Section 2907(c).

HOUSING

Measures Proposed to be Included in the Project

- To mitigate short-term residential displacement sponsor would preserve 286 of the 358 rental units existing on site and hold vacant space in those units to make available to tenants of 72 units that would be displaced during the construction of the residential towers.

- To mitigate long term residential displacement sponsor would offer all tenants the opportunity to transfer to rental units that would be constructed as part of the project at the same rental rate as stipulated in the rental lease at time of transfer.

- The 1,999 dwelling units included as part of the project would provide housing necessary to mitigate the housing demand.

Measures Under consideration by the Project Sponsor

- Provide existing onsite tenants with offsite housing of similar size and type as an option to new onsite housing to minimize displacement effects.

HAZARDS

Measures Proposed to be Included in the Project

- An evacuation and emergency response plan would be developed by the project sponsor or building management staff, in consultation with the Mayor's Office of Emergency Services, to ensure coordination between the City's emergency planning activities and the project's plan, and to provide for building occupants in the event of an emergency. The project's plan would be reviewed by the Office of Emergency Services and implemented by building management insofar as feasible before issuance of final building permits by the Department of Public Works.

ARCHITECTURAL AND HISTORIC RESOURCES

Measures Proposed to be Included in the Project

- The sponsor would retain the services of an archaeologist. The Environmental Review Officer (ERO) in consultation with the President of the Landmarks Preservation Advisory Board (LPAB) and the archaeologist would determine whether the archaeologist should instruct all excavation and foundation crews on the project site of the potential for discovery of cultural and historic artifacts, and the procedures to be followed if such artifacts are uncovered.

- Given the possibility of encountering the remains of cultural or historic artifacts within the project site, prior to the commencement of foundation excavations the project sponsor would undertake a program of archaeological testing. This would consist of observation and monitoring by a qualified historical archaeologist of site clearance of at least any materials below existing grade level, and either the placement of a series of mechanical, exploratory borings or other similar on-site testing methods. The archaeologist would supervise the testing at the site to determine the probability of finding cultural and historical remains. At the completion of the archaeological testing program, the archaeolgoist would submit a written report to the ERO, with a copy to the project sponsor, which describes the findings, assesses their significance and proposes appropriate recommendations for any additional procedures necessary for the mitigation of adverse impacts to cultural resources determined to be significant.

- A historical archaeologist would be present during site excavation and would record observations in a permanent log. The ERO would also require cooperation of the project sponsor in assisting such further investigations on site as may be appropriate prior to or during project excavation, even if this results in a delay in excavation activities.

  In addition, a program of on-site construction monitoring by a qualified historical archaeologist, designed to allow for the recovery of a representative sample of the cultural materials existing on the site, would be implemented by the project sponsor.

This monitoring and recovery program would result in a written report to be submitted to the ERO, with a copy to the project sponsor.

- Should cultural or historic artifacts be found following commencement of excavation activities, the archaeologist would assess the significance of the find, and immediately report to the ERO and the President of the LPAB. Upon receiving the advice of the consultants and the LPAB, the ERO would recommend specific mitigation measures, if necessary. Excavation or construction activities following the preconstruction archaeological testing program which might damage the discovered cultural resources would be suspended for a maximum of four weeks (cumulatively for all instances that the ERO has required a delay in excavation or construction) to permit inspection, recommendation and retrieval, if appropriate.

- Following site clearance, an appropriate security program would be implemented to prevent looting. Any discovered cultural artifacts assessed as significant by the archaeologist upon concurrence by the ERO and the President of the LPAB would be placed in a repository designated for such materials. Copies of the reports prepared according to these mitigation measures would be sent to the California Archaeological Site Survey Office at Sonoma State University.

GEOLOGY/TOPOGRAPHY

Measures Proposed to be Included in the Project

- A detailed foundation and structural design study would be conducted for the building by a California-licensed structural engineer and a geotechnical consultant. The project sponsor would follow the recommendations of these studies during the final design and construction of the project.

- If dewatering were necessary, any groundwater pumped from the site would be retained in a holding tank to allow suspended particles to settle, if this is found necessary by the Industrial Waste Division of the Department of Public Works, to reduce the amount of sediment entering the storm drain/sewer lines.

- Should dewatering be necessary, the final soils report would address the potential settlement and subsidence impacts of this dewatering. Based upon this discussion, the soils report would contain a determination as to whether or not a lateral and settlement survey should be done to monitor any movement or settlement of surrounding buildings and adjacent streets. If a monitoring survey is recommended, the Department of Public Works would require that a Special Inspector (as defined in Article 3 of the Building Code) be retained by the project sponsor to perform this monitoring. Groundwater observation wells would be installed to monitor the level of the water table and other instruments would be used to monitor potential settlement and subsidence. If, in the judgment of the Special Inspector, unacceptable subsidence were to occur during construction, groundwater recharge would be used to halt this settlement. The project sponsor would delay construction if necessary. Costs for the survey and any necessary repairs to service under the street would be borne by the project sponsor.

- During excavation, shoring and bracing would be used to reduce soil movements beneath nearby structures and adjacent streets. The excavation would be kept dry by sump pumping rather than through the use of dewatering wells. This would prevent consolidation of soils supporting adjacent streets and nearby structures and would avoid exposing nearby wooden foundations to dry rot.

- During ground clearing and excavation, mechanical sweeping of streets contiguous to the project site would be used to reduce siltation of storm drains.

- During ground clearing and excavation, any groundwater leaving from the site would be retained in a holding tank to allow suspended particles to settle, if this is found necessary by the Industrial Waste Division of the Department of Public Works, to reduce the amount of sediment entering the storm drain/sewer lines.

CLIMATE

Measures Not Included As Part of the Project

- There are measures that can be taken to reduce wind impacts, at five of 27 measurement locations on or near the project site, including changes in building design. Such measures could include lowering the height of the Market and Eighth Street facades, use of setbacks along these facades, and/or reshaping and reorienting the residential towers. Reduction of winds to acceptable levels would have to be determined by analysis of design alternatives.

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[1] San Francisco Department of City Planning, Downtown Plan Environmental Impact Report (EIR), EE81.3, certified October 18, 1984, Vol. 1 Section V.E., "Transportation and Circulation," pages V.E. 4-28. This material is hereby incorporated by reference and is summarized in the above text.

VI. SIGNIFICANT ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED IF THE PROPOSED PROJECT IS IMPLEMENTED

In accordance with Section 21067 of the California Environmental Quality Act (CEQA), and with Sections 15040, 15081 and 15082 of the State EIR Guidelines, the purpose of this chapter is to identify impacts that could not be eliminated or reduced to an insignificant level by mitigation measures included as part of the proposed project, or by other mitigation measures that could be implemented, as described in Chapter V., Mitigation Measures, page 178.

The findings of significant impacts are subject to final determination by the City Planning Commission as part of its certification process. This chapter in the Final EIR will be revised, if necessary, to reflect the City Planning Commission's findings, before printing of the Final Environmental Impact Report.

The following unavoidable significant environmental impacts resulting from the proposed project have been identified.

Cumulative development in downtown San Francisco would have a significant effect on the environment in that it would generate cumulative traffic increases as well as cumulative passenger loadings on Muni, BART and other regional transit carriers. The proposed project would contribute to these cumulative effects. These cumulative transportation impacts could cause violations to total suspended particulates (TSP) standards in San Francisco with concomitant health effects and reduced visibility.

The project would generate significant adverse shadow impacts on Civic Center Plaza, a Proposition K property. New shadow impacts on Civic Center Plaza would occur in the morning from late August through mid-April. New shadow impacts would also occur during the morning on United Nations Plaza from late October through late February.

VII. ALTERNATIVES TO THE PROPOSED PROJECT

This chapter consists of possible alternatives to the proposed project. For each alternative, environmental impacts are identified, and reasons are stated for rejection of alternatives in favor of the project. Despite the sponsor's reasons for rejecting an alternative project, the City Planning Commission could approve an alternative project if it determines that the alternative would be a more appropriate use of the site.

The following six alternatives are considered: A. No Project; B. Project Conforming to the City Planning Code (6:1 FAR); C. Project Conforming to the Planning Code (9:1 FAR); D. No Shadows on Public Open Space; E. Family Housing; and F. All Residential.

A. ALTERNATIVE ONE: NO PROJECT

1. Description

This alternative would involve no change to the project site as it now exists. The structure located at 1169 Market would remain in use for an unspecified length of time. Existing uses would remain as they are described in Section III. Environmental Setting, page 11.

2. Environmental Impacts

The impacts of this alternative would be essentially the same as the conditions described in Section III. Environmental Setting. None of the impacts associated with the proposed project would occur. As compared to the proposed project, the 'No Project Alternative' would not result in an extension of high-rise development toward Mission Street. No new shadows would be cast on Civic Center Plaza or United Nations Plaza. The existing transportation and air quality conditions (see Section III.D, Transportation, page 49; and III.E, Air Quality, page 55) would continue on streets around the site. Since there would be no new construction on site, there would be no impacts from construction-generated transportation, air quality, or noise. Current conditions of transportation, noise, air

quality, energy consumption, wind and visual effects would not change as a result of the alternative but could be subject to cumulative impacts associated with planned development in the project area.

3. Reasons for Rejection

The project sponsor has rejected this alternative because the site currently contains one building with an effective FAR of 1.02:1. In the opinion of the project sponsor, the current uses would perpetuate an inefficient and wasteful use of land resources within the City's central business district. The sponsor believes that this alternative would not provide maximum investment potential of the site.

B. ALTERNATIVE TWO: PROJECT CONFORMING TO THE PLANNING CODE (6:1 FAR)

1. Description

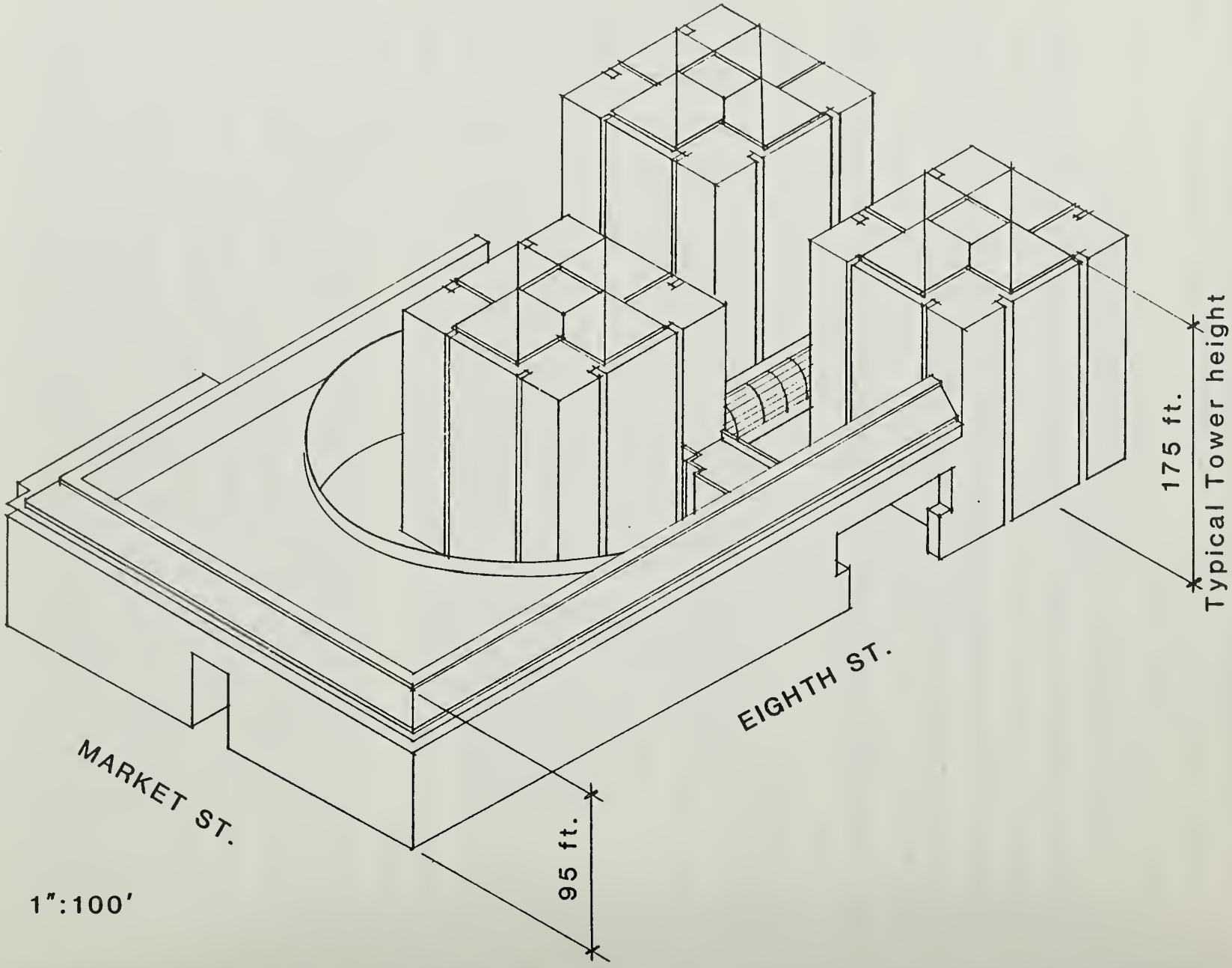
This alternative would consist of a structure smaller than the proposed project in regards to gross floor area and bulk (Figure 35, page 192). Further, unlike the project, this alternative would conform to parking requirements in Section 151 of the City Planning Code. This alternative would not require Conditional Use authorization from the City Planning Commission to allow additional square footage above the basic floor area ratio limits for dwellings, exception from bulk limitations and parking in excess of required and accessory parking. The alternative would continue to require Conditional Use authorization for demolition of the existing residential building, and an exception to the City Planning Code for exceedance of wind comfort criterion at five of 27 measurement locations.

The alternative would contain a total constructed area of 1,420,042 gsf, 825,628 gsf (37%) less than the proposed project, including 31,250 gsf of office space (37% less than the proposed project), 83,475 gsf of retail and personal services space (37% less than the proposed project), 35,852 gsf of tenant storage and recreation space (21,213 gsf less than the project), 922,049 gsf (1,482 units) of residential space, (528,684 and 517 units less than the proposed project), 205,455 gsf (557 spaces) of parking space (127,995 gsf and 347 spaces less than the project), and 79,162 gsf of open space (42,703 gsf less than the proposed project). The overall FAR for the alternative would be 6.0:1, compared to the FAR of about 9.8:1 for the proposed project. Excluding residential space the FAR for this

ALTERNATIVE TWO: PROJECT CONFORMING TO PLANNING CODE (6:1 FAR)

FIGURE 35

SOURCE: BACKEN, ARRIGONI & ROSS, INC.



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alternative would be about 0.8:1, compared to the non-residential FAR of about 1.6:1 for the proposed project.

The height, bulk and facade design of the Market Street building would be similar to the proposed project. The height of the residential towers would be reduced by 15 stories, to a maximum height of 13 stories (175 feet).

The open space requirement would decrease from 126,426 gsf for the proposed project to 55,640 gsf in this alternative, including 53,352 gsf of private residential open space and 2,288 gsf of public open space. The alternative would provide 79,162 gsf of open space (42,703 gsf less than the proposed project), including 29,138 gsf of private residential open space (6,977 less than the proposed project due to decreases in the number of residential balconies), 41,368 gsf of common residential open space (16,382 gsf less than the proposed project, and equivalent to 31,104 gsf of private residential open space satisfying the Code requirement), and 8,656 gsf of public open space (19,344 gsf less than the proposed project).

2. Environmental Impacts

The net increase in office and retail/personal services uses would be approximately 37% less than the project. The visual quality/urban design impacts of the proposed project would be less pronounced in this alternative compared to the project because the residential towers would be reduced in height from 28 to 13 stories (264 feet to 175 feet).

Transportation impacts from increased travel demand on the site would be 43% less than for the proposed project. The decrease in project travel would not affect impacts on levels of service at the intersections analyzed for the proposed project since the project is only a small portion of the cumulative travel demand which would impact on the intersections. Parking provided in this alternative would be 557 spaces, 347 less than the number provided in the proposed project. Parking demand for this alternative would be 955 spaces, resulting in a deficit of 398 spaces. The deficit of spaces would result in an increase in demand for spaces above that currently provided in public off street parking garages and lots in the project. The current 83% occupancy level of those garages and lots would increase to slightly above 100%.

Air quality impacts would be about 43% less than for the proposed project, a decrease in proportion with the decrease in travel demand associated with the alternative. Energy consumption in the alternative would be about 37% less than for the proposed project.

The decrease in space in this alternative as compared to the proposed project would not have a measurable effect on the increase in operational noise. Impacts from construction-generated noise would be less than the proposed project due to a shorter construction period. The alternative would contribute 37% less to cumulative impacts on community service providers than the proposed project, in proportion with the decrease in overall floor area.

Shadow impacts associated with this alternative would be less than the project due to the reduction in height of the residential towers from 28 stories (264 feet) to 13 stories (175 feet). Wind impacts of this alternative would be similar to the project even though the three residential towers and the Market Street frontage would be lower in height than the project (see Appendix E, Wind Impact Analysis). Shadow impacts would occur on United Nations Plaza, project open space and portions of Market Street and Eighth Street. These impacts would be approximately 25% to 35% less on open space than the proposed project.

Net new employment generation would be 470, compared to 677 for the project. Growth inducing impacts would be similar to those of the project.

3. Reasons for Rejection

This alternative has been rejected by the project sponsor because it does not provide the maximum amount of developable space possible. The project sponsor believes that the increased amount of parking space would be needed to accommodate parking demand generated through use of office and commercial retail floor area.

C. ALTERNATIVE THREE: PROJECT CONFORMING TO THE PLANNING CODE (9:1 FAR)

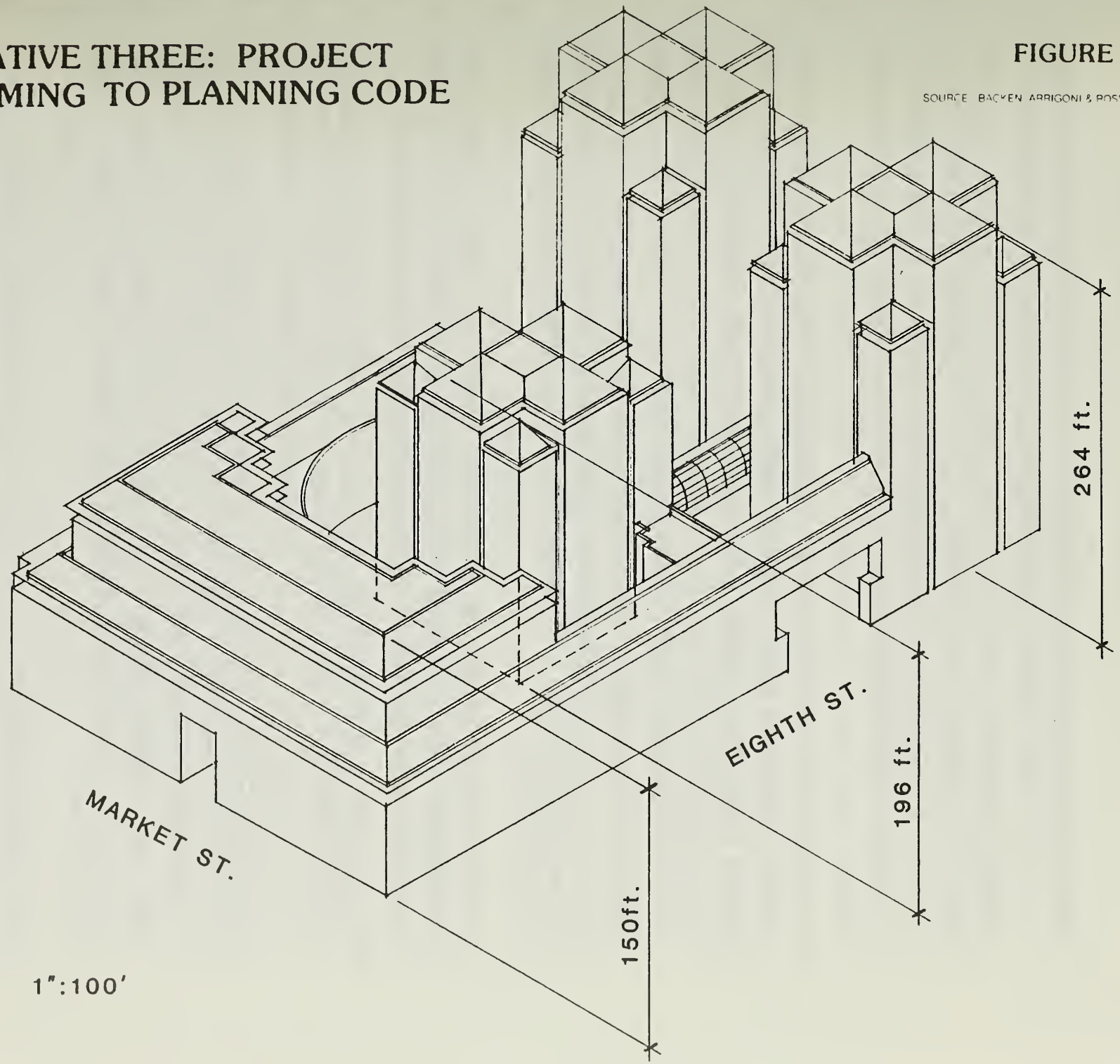
1. Description

This alternative would consist of a structure smaller than the proposed project in regards to gross floor area and bulk (Figure 36, page 195). Further, unlike the project, this alternative would conform to parking requirements in Section 151 of the City Planning Code. This alternative, with a 9:1 FAR, reflects the maximum FAR for the site if the project utilized Transferable Development Rights (TDRs). While the uses in both the project and this alternative do not require use of TDRs for floor area above the base FAR, this alternative generally reflects the impacts associated with a project of 9:1 FAR.

ALTERNATIVE THREE: PROJECT CONFORMING TO PLANNING CODE (9:1 FAR)

FIGURE 36

SOURCE: BACKEN, ARRIGONI & ROSS, INC.



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This alternative would not require Conditional Use authorization from the City Planning Commission to allow additional square footage above the basic floor area ratio limits for dwellings, exception from bulk limitations and parking in excess of required and accessory parking. The alternative would continue to require Conditional Use authorization for demolition of the existing residential building, and exceptions to the City Planning Code for rear yard setbacks and exceedance of wind comfort criteria at five of 27 measurement locations.

The alternative would contain a total constructed area of 1,704,410 gsf, 541,260 gsf (24%) less than the proposed project, including 49,600 gsf of office space (the same as the proposed project), 132,500 gsf of retail and personal service space (same as proposed project), 1,364,790 gsf (2,178 units) of residential space (85,945 gsf less and 179 units more than the proposed project), and 121,865 gsf of open space (the same as the proposed project). The overall FAR for the alternative would be 9.0:1, compared to the FAR of about 9.8:1 for the proposed project. Excluding residential space, the FAR for this alternative would be about 1.3:1, compared to the non-residential FAR of about 1.6:1 for the proposed project.

The height, bulk and facade design of the Market Street building would be similar to the proposed project. The height of the central residential tower would be a maximum height of 13 stories (12 feet) compared to the 28 stories (264 feet) of the proposed project.

The open space requirement for the proposed project would be 126,426 gsf, compared to 82,050 gsf in this alternative, including 78,408 gsf of private residential open space and 3,642 gsf of public open space associated with the commercial space. The alternative would provide 121,685 gsf of open space (the same as the proposed project), including 36,115 gsf of private residential open space (the same as the proposed project), 57,750 gsf of common residential open space (the same as in the proposed project, and equivalent to 43,421 gsf of private residential open space, satisfying the City Planning Code requirement of 42,293 gsf), and 28,000 gsf of public open space (the same as in the proposed project).

2. Environmental Impacts

The net increase in commercial uses (office and retail/personal services) would be essentially the same as in the project. The visual quality/urban design impacts of the

proposed project would be different in this alternative compared to the project because of the decrease in height of the central residential tower from 28 to 13 stories.

Transportation impacts from increased travel demand on the site would be approximately 5% less for the proposed project. The decrease in project travel would not affect impacts on levels of service at the intersections analyzed for the proposed project since the project is only a small portion of the cumulative travel demand which would impact on the intersections. Parking would be provided in excess of that required to conform with the City Planning Code, and would be 985 spaces, 81 more than the number provided in the proposed project. Parking demand for this alternative would be 1,446 spaces, resulting in a deficit of 461 spaces. The excess would result in a decrease in occupancy in public off-street parking garages and lots in the project vicinity. Remaining vacant spaces in those garages and lots would be occupied, and a deficit of 241 spaces in the area would occur.

Air quality impacts would be about 5% less than for the proposed project, a decrease in proportion with the decrease in travel demand associated with the alternative. Energy consumption in the alternative would be about 8% more than for the proposed project due to the increase in the number of residential units.

The decrease in space in this alternative as compared to the proposed project would not have a measurable effect on the increase in operational noise. Impacts from construction-generated noise would be somewhat less as compared to the proposed project due to a slightly shorter construction period. The alternative would contribute 24% less to cumulative impacts on community service providers than the proposed project, in proportion with the decrease in overall floor area.

Shadow impacts associated with this alternative would be somewhat less than the project due to the reduction in height of the central residential tower from 28 stories (264 feet) to 13 stories (175 feet). Shadow impacts would occur on surrounding public open space and project open space as well as on Market Street and Eighth Street. Wind impacts would be similar to the project even though there would be a reduction in height of the central residential tower.

Net new employment generation woud be 557, compared to 677 for the project. Office and retail employment in this alternative would be the same as the project, while the number of janitorial and service workers would decline from 138 to 105. Growth inducing impacts would be similar to those of the project.

3. Reasons for Rejection

This alternative has been rejected by the project sponsor because it does not provide the maximum amount of developable space possible. The project sponsor believes that the increased amount of parking space would be needed to accommodate parking demand generated through use of office and commercial retail floor area.

D. ALTERNATIVE FOUR: NO SHADOWS ON PUBLIC OPEN SPACE

1. Description

This alternative would not cast new shadows on either U.N. or Civic Center Plazas, and would consist of a structure smaller than the proposed project (Figure 37, page 199). In this alternative the number of apartments would decrease from 1,999 to 1,351 decreasing the amount of residential space from 1,450,735 to 799,775 gsf. There would be 38,137 gsf of office space included in this alternative, 11,463 gsf (23%) less than the project. All other uses would be the same as the project. Net new residential space would be 652,625 square feet. The FAR for this alternative would be about 6.0:1, compared to about 9.8:1 for the project. Total constructed floor area for this alternative would be 1,268,851 gsf, compared to 2,245,670 gsf for the project. This alternative would require Conditional Use authorization for demolition of the existing residential building, and exceptions to the City Planning Code for rear yard setbacks and exceedance of wind comfort criteria.

The height of this alternative would be 195 feet (20 stories); this height would only occur in the residential tower located at the Mission-Eighth Street intersection. This height would be 69 feet (8 stories) less than the project. The reduced height and floor area of this alternative would result in reduced bulk dimensions, and alteration of the Market Street facade design compared to the project.

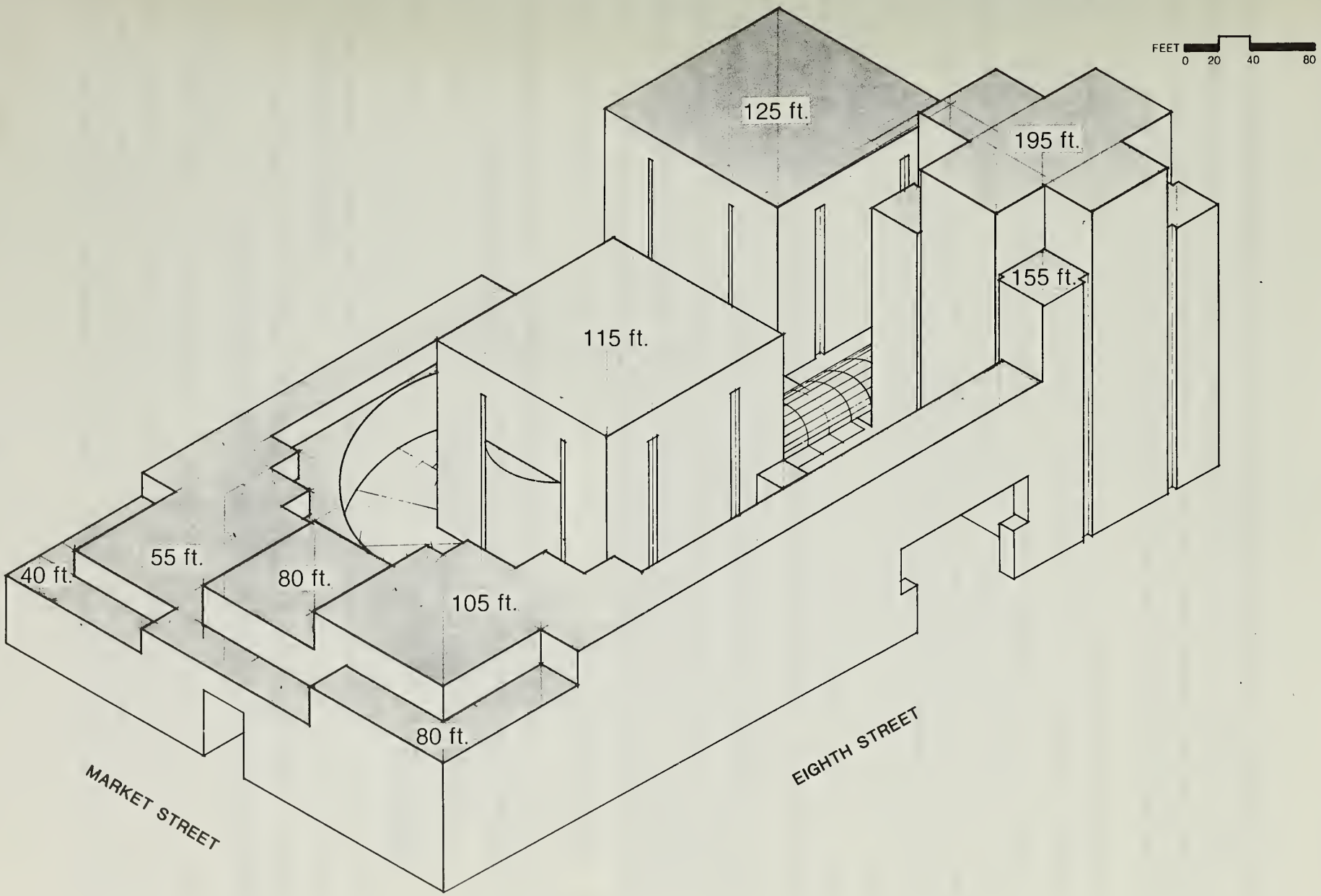
2. Environmental Impacts

This alternative would provide 45% less residential space than the proposed project. Land use impacts would be decreased as compared to the proposed project since office space would be reduced by 23% in this alternative. Impacts on urban design, shadows and wind would be less than those described for the proposed project since the alternative would be less bulky and shorter in height than the proposed project. The extent of the shadow fan for the project would be reduced by approximately 15-20%.

Daily net new trips generated by the alternative would be 19,733, 20% less than the number of new trips projected for the proposed project. The number of peak-hour trips

ALTERNATIVE FOUR: NO SHADOWS ON PUBLIC OPEN SPACE

FIGURE 37



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would decrease from 1,085 in the proposed project to 781 for this alternative, a decrease of 28%. Transit trips would decrease proportionally with a decrease in overall transit demand, but this decrease would not have a measurable effect on the cumulative impacts on the transit carriers described as part of the analysis of the proposed project.

Air quality impacts would decrease by 20%, in proportion to the decrease in vehicle miles traveled, as compared to the proposed project. Operational noise would decrease by 20%, in proportion to the decrease in vehicle traffic generated by the alternative, however the decrease would be imperceptible. Construction-generated noise impacts would be less than those described for the proposed project, due to the duration of the construction period, which would be between 12-18 months less than the project.

Wind impacts of this alternative would be similar to the project even though the residential towers would be up to 125 feet less in height than the project, and the Market Street frontage would be up to 110 feet less in height than the project.

Net new employment generated by this alternative, both direct and indirect, would decrease from 1,518 jobs in the proposed project to 1,134 jobs in the alternative. On-site construction related employment would be about 360, compared to 453 for the project. Growth inducing impacts would be similar to those of the project.

3. Reasons for Rejection

The project sponsor has rejected this alternative because the size of the alternative would not, in the sponsor's opinion, realize a reasonable return on his investment.

E. ALTERNATIVE FIVE: FAMILY HOUSING

1. Description

This alternative would be essentially the same as the proposed project except that the residential towers would be changed from exclusive studio units to a greater mix of housing -- reflecting recent housing and demographic trends in San Francisco. All other aspects of this alternative would be similar to the proposed project.

In this alternative the number of residential units would decline from 1,999 to 1,667 while the amount of residential space would be 1,450,735 gsf, the same as the project. Studio unit floor area in this alternative would be 622 gsf; approximately 500 studio units (30% of total units), would be included in this alternative, accounting for 311,000 gsf. One-

bedroom units would total 900 gsf in area; 500 units (30% of total) would account for 450,000. Two-bedroom units would total 1,000 gsf in area; 500 units (30% of total) would account for 500,000 gsf. Three-bedroom units would total 1,136 gsf in area; 167 units (10% of total) would account for 189,735 gsf. Net new residential space would be 1,303,385 square feet, the same as the project.

2. Environmental Impacts

This alternative would provide the same amount of residential and office space as the proposed project. Land use and growth inducement would be similar to the proposed project. Impacts on urban design, shadows and wind would be the same as described for the proposed project since the external design of the alternative would be identical to the proposed project.

Daily net new trips generated by the alternative would be 22,310, 10% less than the number of net new trips projected for the proposed project. The number of peak-hour trips would decrease from 1,085 in the proposed project to 977 for this alternative, a decrease of 10%. Transit trips would increase slightly due to the increased number of children that could be expected as part of this alternative, but this increase would not have a measurable effect on the cumulative impacts on the transit carriers described as part of the analysis of the proposed project.

Air quality impacts would decrease by 10%, in proportion to the decrease in vehicle miles traveled, as compared to the proposed project. Operational and construction-generated noise impacts would be unchanged from those described for the proposed project.

This alternative would result in the same number of direct and indirect jobs as the project. Growth inducing impacts would be similar to those of the project.

3. Reasons for Rejection

The project sponsor has rejected this alternative because the introduction of family housing on heavily traveled streets would, in the sponsor's opinion, not be an economically feasible project.

F. ALTERNATIVE SIX: ALL RESIDENTIAL

1. Description

This alternative would be essentially the same as the proposed project, except that all of the project office space and 100,000 gsf (75%) of the project retail space would be changed to residential use. This alternative would contain six loading docks, compared to 11 for the project. All other aspects of this alternative would be identical to the proposed project.

In this alternative the number of residential units would increase from 1,999 to 2,250, reflecting an increase in the residential space from 1,450,735 gsf with the project to 1,600,335 gsf, a 10% increase in residential space compared to the project. Net new residential space would be 1,485,685 gsf, compared with 1,303,585 gsf with the project. Further, this alternative would contain 32,500 gsf of retail space, 100,000 gsf less than the project total of 132,500 gsf. The retail space would be oriented to the needs of both project site residents and workers and visitors in the project site vicinity. The building along Market Street would contain 22,500 gsf of retail space in this alternative, compared to 102,500 gsf of similar space with the project. The residential towers fronting on Mission Street would contain 10,000 gsf of retail space in this alternative, compared with 30,000 gsf of similar space with the project.

2. Environmental Impacts

This alternative would provide 10% more residential space than the project, would not provide any office space, and would provide 75% less retail space than the project. Land use impacts would differ compared to the project since there would be less office and retail space and more residential space. There would be a lower level of employment generation in this alternative compared to the project. Impacts on urban design/visual qualtiy would be the same as described for the proposed project since the external design of the alternative would be identical to the proposed project.

Daily net new trips generated by the alternative would be 16,368, 34% less than the number of net new trips projected for the proposed project. The number of peak-hour trips would decrease from 1,085 in the proposed project to 716 for this alternative, a decrease of 34%. Transit trips would increase slightly due to the increased number of children that could be expected as part of this alternative, but this increase would not

have a measurable effect on the cumulative impacts on the transit carriers described as part of the analysis of the proposed project.

Air quality impacts would be about 34% less than for the proposed project, a decrease in proportion with the decrease in travel demand associated with the alternative. Energy consumption in the alternative would be about 12% more than for the project, due to the increase in the number of dwelling units.

The change in uses compared to the project would not have a measurable effect on the level of operational noise. Impacts from construction-generated noise would be the same as the project. This alternative would contribute to cumulative impacts on community service providers at a level similar to that of the project.
Shadow and wind impacts associated with this alternative would be the same as the project since the external design of this alternative would be identical to the proposed project.

This alternative would result in a decrease of 80% in permanent employment compared to the project. The total number of direct and indirect jobs generated would decline from 1,518 with the project to 284 with this alternative. Growth inducing impacts would be similar to those of the project.

3. Reasons for Rejection

The project sponsor rejects this alternative because the elimination of all of the office space and 75% of the retail space would not, in the sponsor's opinion, generate enough revenue to realize a reasonable return on his investment. The sponsor believes that the proposed project contains a substantial amount of housing (equal to 65% of the total project floor area), as well as a mix of other uses.

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APPENDIX A

DEPARTMENT OF CITY PLANNING 450 McAllister St. - 5th Floor

(415)558-5260

NOTICE THAT AN
ENVIRONMENTAL IMPACT REPORT
IS DETERMINED TO BE REQUIRED

Date of this Notice: October 21, 1983

Lead Agency: City and County of San Francisco, Department of City Planning
450 McAllister St. - 5th Floor, San Francisco CA 94102

Agency Contact Person: Paul Rosetter Tel: (415) 558-5260

Project Title: 83.196 E: Trinity Center

Project Sponsor: Trinity Properties

Project Contact Person: Jim Mitchell
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Project Address: 1169 Market Street

Assessor's Block(s) and Lot(s): Block 3702, Lots 51, 52, 53

City and County: San Francisco

Project Description: Construct on 158,000 sq. ft. site, a 1,580,000 sq. ft. mixed use development in 2 phases with phase one constructing 960 apartments (710,000 sq. ft.) in 2 buildings and removing 50 existing parking spaces & 72 dwelling units and phase two constructing 820,000 sq. ft. of office space, 40,000 sq. ft. of retail & 240 parking spaces in 4 buildings after removal of the remaining 286 units and 275 parking spaces.

THIS PROJECT MAY HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT AND AN ENVIRONMENTAL IMPACT REPORT IS REQUIRED. This determination is based upon the criteria of the Guidelines of the State Secretary for Resources, Sections 15081 (Determining Significant Effect), 15082 (Mandatory Findings of Significance) and 15084 (Decision to Prepare an EIR), and the following reasons, as documented in the Initial Evaluation (initial study) for the project, which is on file at the Department of City Planning:

(see attached initial study)

Deadline for Filing of an Appeal of this Determination to the City Planning Commission: October 31, 1983.

An appeal requires 1) a letter specifying the grounds for the appeal, and 2) a $35.00 filing fee.

cc: Adjacent property owners
Interested parties
Project sponsor

Alec S. Bash

Alec S. Bash, Environmental Review Officer

FINAL INITIAL STUDY
TRINITY CENTER
1169 Market Street
File #83.196
October 21, 1983

I. PROJECT DESCRIPTION

The proposed project would be a mixed use development located on the southeast corner of Market and Eighth Streets in Assessor's Block 3702, lots 51, 52, 53. The site extends from Market through to Mission Street. Figure 1 (p. 4) shows the location of the site. The 158,000 square foot site would be developed with six buildings totalling 1.58 million gross square feet (gsf). When fully built, there would be 960 rental apartment units (710,000 square feet), 820,000 square feet of office space, 50,000 square feet of retail space and parking for 240 cars. The apartments would occupy two 27-story buildings fronting on Mission Street; the offices would occupy two buildings fronting on Market Street and two buildings in the center of the site; retail would be located on the ground floor; and parking would be below grade.

The site is currently occupied by a 180,000 square-foot building that contains 358 apartments and parking for 325 cars (73 of these spaces are below grade). This building varies in height from three to seven stories.

The project would be constructed in two phases: phase one would consist of the two residential towers fronting Mission, retention of parking for 275 cars and 10,000 square feet of retail space. In order to construct these buildings, a portion of the existing building on the site would be demolished, causing a loss of 72 units and 50 parking spaces. Construction of phase two would begin approximately three years after the completion of phase one and would consist of four more buildings with 820,000 gsf of office space, 40,000 gsf retail space and below grade parking for 240 cars. (The 275 parking spaces would be eliminated.) These buildings would range in height from 85 to 155 feet. If market conditions indicate that there is a demand for residential units, one of the office buildings would be developed with 500 apartments. This would reduce office development by about 400,000 gsf. Phase two construction would require demolition of the remaining portion of the existing building.

The project site is in the C-3-G (Downtown General Commercial) zoning district, which permits a maximum floor area ratio (FAR) of 10 to 1. The project would have a FAR of 10 to 1, as no bonuses are being sought by the

sponsor. The site spans two height and bulk districts: along Market, the designation is 240-G, which permits building height of 240 feet, maximum building length of 170 feet and maximum diagonal dimension of 200 feet above 80 feet in height; from Stevenson Street to Mission, the designation is 240-H, which permits a building height of 240 feet with the same bulk limitation except that the limit applies above 100 feet. The project buildings would step from a height of 85 feet along Market Street to a height of 240 feet at the center of the site and along Mission.

II. SUMMARY OF POTENTIAL EFFECTS

This Initial Study is a preliminary evaluation of the proposed project and identifies environmental impacts which could be considered significant and will be addressed in an Environmental Impact Report (EIR). It also discusses those effects of the project which could not have a significant impact on the environment, and require no further study in the EIR.

A. Significant Effects

The following issues are determined to be potentially significant and will be addressed in the EIR:

- relationship to the Comprehensive Plan
- land use
- visual quality
- displacement of residents and housing demand
- traffic, transit, parking, and loading
- noise impacts due to pile driving
- interior noise levels in new apartments
- air quality impacts due to traffic
- wind
- cumulative wastewater and fire and police protection impacts
- energy

B. Insignificant Effects

Other potential effects of the project are described below. These effects either would be insignificant or would be mitigated through measures incorporated into the project. They will not be addressed in the EIR.

Noise: Most construction noise impacts, except for pile driving, would be mitigated by the sponsor by requiring the contractor to employ state-of-the art muffling equipment and other techniques. Traffic noise would not be

increased by the project because there would be fewer parking spaces on the site than currently exist. After completion of construction, project occupancy would not increase audible noise levels in the site area.

Construction/Air Quality: The construction air quality impacts of the project would be mitigated by requiring the contractor to water down the site as needed to reduce airborne dust.

Air Quality/Climate: The project would not affect temperatures nor affect the moisture content of the air.

Utilities and Public Services: The project would not affect public services and utilities nor require increased service capacity. Solid waste disposal would not be a problem.

Biology: The project would have no direct effect on plants or animals as the site is already developed.

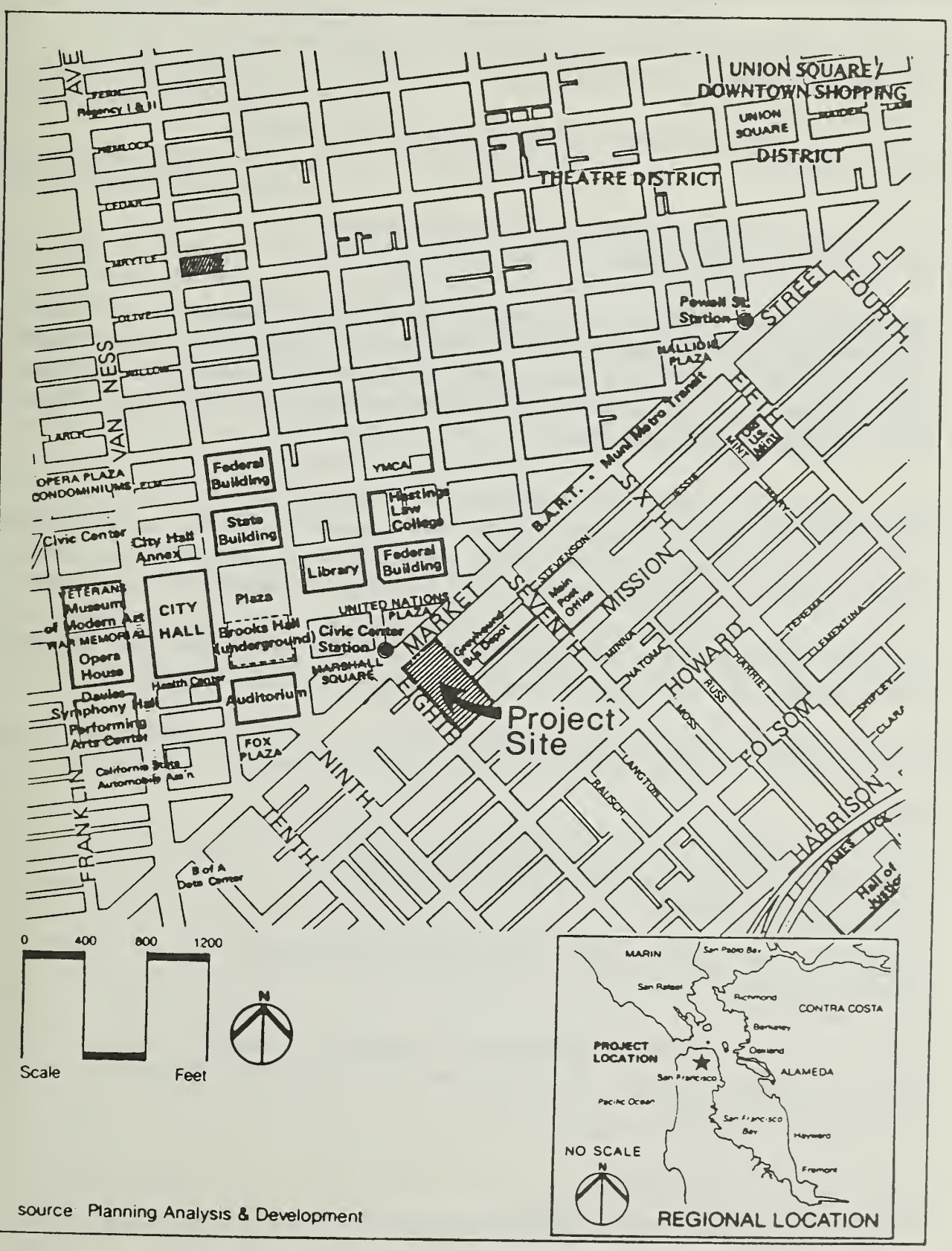
Land/Geology/Soils: Any geologic impacts due to the project would be mitigated by following the recommendations of a California-licensed soils engineer regarding excavation and foundation design.

Archaeology: Potential archaeological impacts would be mitigated in accordance with the environmental requirements of the City of San Francisco.

Historic Resources: No landmarks would be affected by the proposed project.

figure 1

LOCATION PLAN



source: Planning Analysis & Development

III. ENVIRONMENTAL EVALUATION CHECKLIST

. COMPATIBILITY WITH EXISTING ZONING AND PLANS. Could the project:	YES	NO	DISCUSSED
1. Require a variance, special authorization, or change to the City Planning Code or Zoning Map?	X		X
*2. Conflict with the Comprehensive Plan of the City and County of San Francisco?	X		X
*3. Conflict with any other adopted environmental plans and goals of the City or Region?		X	X

The project would require a Conditional Use (CU) authorization for a Planned Unit Development under Section 303 and 304 of the City Planning Code. The CU application would include a request for deviation from the residential rear yard requirement. The project would also be subject to Discretionary Review by the City Planning Commission.

The project would generally comply with the Comprehensive Plan but could conflict with the Environmental Protection Element's Land Use Compatibility guidelines for community noise which discourage new residential and office construction in areas such as Mission and Market Streets where noise levels are 75 L_{dn}.[1] The compatibility of the project with specific policies and goals of the Comprehensive Plan will be discussed in the EIR. The project would not conflict with any regional environmental plans or goals.

B. ENVIRONMENTAL EFFECTS. Could the project:	YES	NO	DISCUSSED
1. <u>Land Use</u>			
*a. Disrupt or divide the physical arrangement of an established community?	X		X
b. Have any substantial impact upon the existing character of the vicinity?	X		X

The project would involve demolition of residential apartment units at each phase of construction. The land use impacts of the project will be addressed in the EIR.

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* Derived from State EIR Guidelines, Appendix G, normally significant effect.

2. Visual Quality

	YES	NO	DISCUSSED
*a. Have a substantial, demonstrable negative aesthetic effect?	___	X	X
b. Substantially degrade or obstruct any scenic view or vista now observed from public areas?	X	___	X
c. Generate obtrusive light or glare substantially impacting other properties?	X	___	X

Because the project would cover portions of three lots (i.e., one third of a city block) and would have building heights ranging from 85 to 240 feet, it would have the potential for blocking views and generating light and glare. For example, the project could block views of the downtown skyline from locations south and west and views of City Hall from the James Lick Freeway. The EIR will discuss project aesthetics, impacts on scenic views, and light and glare. Inclusion of graphic exhibits in the EIR will be necessary to show the visual quality effects of the project.

3. Population

	YES	NO	DISCUSSED
*a. Induce substantial growth or concentration of population?	X	___	X
*b. Displace a large number of people (involving either housing or employment)?	X	___	X
*c. Create a substantial demand for additional housing in San Francisco, or substantially reduce the housing supply?	X	___	X

About 500 people currently reside in the apartments on the site. At the end of phase one, 100 of the existing residents would be displaced and new residents would increase by about 1000, for a net increase of 900 residents.[2] In phase two, the balance of the existing residents would be relocated with no compensatory increase in the permanent population on the site. At project completion, the population would be 1000, or an overall increase of 500 people. The displacement impacts of the project will be addressed in the EIR.

Currently, about 15 people work at the site in building management and maintenance. At the end of phase one, maintenance staff would increase by 43, for a total of 58. In addition, there would be about 29 retail workers on the site at the end of phase one.[3] At the end of phase two, there would be 3280 office workers, 114 more retail workers and 86 more maintenance

workers for an additional 3480 workers. The daytime population would be about 3570 at the completion of phase two.

Net new office construction proposed for phase two (805,000 gsf) would create a need for 716 dwelling units according to the City's Office Housing Production Program formula. The 960 units proposed would provide 244 more than demanded by the office space.

The loss of 358 existing apartments also would increase the need for housing in the City. If none of the existing residents return to the site yet seek other housing in the City, and if all incoming residents are new to the City and consequently do not free up another unit in San Francisco after moving to the site, then there could be a need for 114 units more than the 960 units proposed by the sponsor, or 1074 overall. A housing mitigation measure is discussed on page 17. Housing demand met and/or generated by the project will be discussed further in the EIR.

4. Transportation/Circulation	YES	NO	DISCUSSED
*a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system?	X		X
b. Interfere with existing transportation systems, causing substantial alterations to circulation patterns or major traffic hazards?	X		X
c. Cause a substantial increase in transit demand which cannot be accommodated by existing or proposed transit capacity?	X		X
d. Cause a substantial increase in parking demand which cannot be accommodated by existing parking facilities?	X		X

Upon completion, the project would generate a net increase of about 25,350 person trip ends per day. Such a volume of trips could cause significant impacts on street, transit and parking facilities. Auto traffic generated by the project could interfere with existing transit or traffic flow and could result in increased pedestrian hazards. The traffic, parking, transit and service/loading impacts of the project will be addressed in the EIR to determine whether or not they are substantial.

5. Noise	YES	NO	DISCUSSED
*a. Increase substantially the ambient noise levels for adjoining areas?	X		X
b. Violate Title 25 Noise Insulation Standards, if applicable?	X		X
c. Be substantially impacted by existing noise levels?	X		X

Construction of phase one of the project would take place over about 30 months. One week would be necessary for demolition; pile driving (if found to be necessary) would take place over a period of one to one and a half months. Construction of phase two also would take about 30 months; pile driving (if necessary) would take place during two of these months. Construction noise at the site is controlled by Ordinance 274-72, Regulation of Noise, Section 2907. This ordinance requires all powered construction equipment except impact tools and equipment (such as pile drivers) to emit not more than 80 dBA when measured at a distance of 100 feet. Impact tools and equipment shall have maximum noise attenuating features as specified in Section 2907(c). The ordinance further prohibits construction activity between the hours of 8 PM and 7 AM. Noise generated during construction of phase one could be troublesome to the remaining residents of the existing apartments particularly during possible pile driving operations. Similarly, noise during phase two construction would impact residents of the phase one towers. Mitigation measures aimed at reducing these impacts are discussed on pages 15 and 16. Noise impacts of pile driving will be addressed in the EIR.

After project completion, there would not be a noticeable increase in traffic noise because there would be fewer parking spaces than are presently provided on the site. Noise from mechanical systems must comply with Section 2909 of the noise ordinance which limits equipment noise levels to 70 dBA (as measured at the property line) between 7 AM and 10 PM. Except during lulls in traffic, noise from the mechanical systems would not have a noticeable impact on ambient noise levels after project occupancy. The residential units will be subject to Title 25 noise reduction requirements. Reduction of interior noise levels will be addressed in the EIR. No further study of operational noise is needed.

6. Air Quality/Climate	YES	NO	DISCUSSED
*a. Violate any ambient air quality standard or contribute substantially to an existing or projected air quality violation?	X		X
*b. Expose sensitive receptors to substantial pollutant concentrations?		X	X
c. Permeate its vicinity with objectionable odors?		X	
d. Alter wind, moisture or temperature (including sun shading effects) so as to substantially affect public areas, or change the climate either in the community or region?	X		X

Construction and occupancy of the project would not violate any ambient air quality standards. Construction activities could generate dust, but as the site is totally paved, this impact could be reduced to insignificant levels with proper mitigation. (See mitigation measures, p. 16) The project would contribute to cumulative air quality standards violations in the Bay Area as a result of increased vehicular trips, which will be addressed in the EIR. There are no known sensitive receptors in the site area that would be affected by the air quality impacts of the project. The project's effect on wind patterns on streets and sidewalks near the site will be addressed in the EIR.

7. Utilities/Public Services	YES	NO	DISCUSSED
*a. Breach published national, state or local standards relating to solid waste or litter control?		X	X
b. Extend a sewer trunk line with capacity to serve new development?		X	X
c. Substantially increase demand for schools, recreation or other public facilities?	X		X
d. Require major expansion of power, water, or communications facilities?		X	X

The project would generate about 2060 tons of solid waste per year.[4] It would not breach any solid waste or litter control standards. Because the small size of the units (i.e., 400-500 gsf) would make the project an

unlikely choice for families, it would not substantially increase the demand for school facilities.

The project would incorporate more extensive fire protection measures than the building presently on the site because current Building Code requirements are more stringent than those in effect when the existing apartments were built. Fire stations Nos. 1, 3 and 36 would serve the site and have approximate response times of three to four minutes. The project would not call for additional fire protection equipment or personnel, but it would add to the cumulative demand for fire protection services. Cumulative development south of Market Street could result in the need for another fire station to serve that area.[5] This will be discussed further in the EIR.

The site is within the Police Department's Southern District, which is patrolled 24 hours a day by radio-dispatched patrol cars and supplementary foot patrols. Development of the site to a greater intensity than now exists would increase the potential for crime due to the presence of more people and property. However, the project would have security guards and an electronic security system. The Police Department would not have to add equipment or personnel to serve the project, but cumulative development could increase the need for police protection services in the area.[6] The impacts of cumulative development will be discussed further in the EIR.

There are two parks/public open spaces located near the site at Civic Center Plaza and on Sixth between Howard and Folsom. While project residents may use these facilities, they are not likely to burden urban parks or other recreational facilities.

The project would consume gas and electricity supplied by PG&E. While the project would likely require some modification and/or reinforcment of the existing distribution circuitry (such as adding a transformer vault), no power plant expansion would be necessary.[7]

The residential units and retail space would together consume 54,800 gallons of water per day when phase one is fully occupied. An additional 110,500 gallons per day would be consumed by offices and retail space built in phase two. At completion of both phases, the project would consume about 165,300 gallons of water per day.[8] This would be an increase of about 135,770 gallons over the existing on-site use of about 29,540 gallons per day. Water is provided to the site via a 12-inch main on Mission and a 6-inch main on Eighth Street. There is an adequate supply of water in the area to serve the project. No major expansion of water facilities (e.g., reservoirs) would be necessary to serve the project.[9]

Waste water generated by the project would be about 165,300 gallons per day. The existing brick sewer on Eighth Street is adequate to handle this load during dry weather and no new sewer trunk lines would be needed to serve the site. However, cumulative development south of Market Street could result in the need for diversion of flow or enlargement of the Mission Street trunk line in order to handle wet weather flows. This need is currently the subject of a hydraulic study.[10] During dry weather, all waste water from the site is transported to the Southeast Water Pollution Control Treatment Plant where it receives secondary treatment. During wet weather, excess effluent is diverted to the Northpoint Water Pollution Control Plant where it receives primary treatment.

Pacific Telephone has equipment on Eighth, Mission and Stevenson Streets. Some of these facilities would have to be improved in order to hook up service to the project.[11] This would involve temporary blockage of up to one lane of traffic. It is anticipated that the necessary improvements would take no longer than 30 days to complete. No off-site expansion of communications facilities would be necessary to serve the project.

. Biology	YES	NO	DISCUSSED
*a. Substantially affect a rare or endangered species of animal or plant or the habitat of the species?		X	
*b. Substantially diminish habitat for fish, wildlife or plants, or interfere substantially with the movement or any resident or migratory fish or wildlife species?		X	
c. Require removal of substantial numbers of mature, scenic trees?		X	

No plants or animals would be affected by the project as the site is fully developed. The existing plants would be replaced with new landscape materials. No rare or endangered species are found on or near the site. No further discussion will be provided in the EIR.

. Geology/Topography	YES	NO	DISCUSSED
*a. Expose people or structures to major geologic hazards (slides, subsidence, erosion and liquefaction).	X		X
b. Change substantially the topography or any unique geologic or physical features of the site?		X	

According to the Community Safety Element of the Comprehensive Plan, the site is within a Special Geologic Study Area in which there is the potential for ground failure during an earthquake. Increased population on the site increases the amount of people exposed to this hazard. During a 1906-strength earthquake, the site would undergo "very strong" ground shaking and possibly liquefaction, subsidence and heavy building damage. The intensity of ground shaking not only depends on the magnitude of an earthquake, but the distance to the epicenter as well.

All buildings would meet the seismic safety standards of the Uniform Building Code and the San Francisco Building Code, which would mitigate most seismic hazards. Because the proposed buildings would be of steel frame construction, they are not likely to collapse in an earthquake, although structural damage would be expected. If deemed necessary by soils and structural engineers, the building piles would be founded on bedrock.

The site has an average elevation of 38 feet above sea level, and slopes gently downward to the southeast with about a 2% grade. Soils investigations for an adjacent lot on Market Street[12] found artificial fill and dune sand to a depth of 12 feet, loose to dense sands and sandy peat to 50 feet, stiff clays to 75 feet, sand to 80 feet and bedrock below. Groundwater was encountered at about 20 feet.

The site would be excavated to a depth of about 15 feet. By the end of phase two, about 105,000 cubic yards of earth would be removed from the site. Prior to construction, a soils analysis would be prepared by a California-licensed soils engineer, as required by the San Francisco Bureau of Building Inspection. By following the recommendations of the soils engineer, geologic impacts can be reduced to an insignificant level and require no further study in the EIR.

10. Water	YES	NO	DISCUSSED
*a. Substantially degrade water quality, or contaminate a public water supply?	___	X	X
*b. Substantially degrade or deplete ground water resources, or interfere substantially with ground water recharge?	___	X	X
*c. Cause substantial flooding, erosion or siltation?	___	X	X

There is no surface water at the site. With construction of the project, the site would remain impervious and, therefore, water infiltration and drainage patterns would not be altered. Groundwater is at a depth of about 20 feet

below the ground surface. During excavation dewatering of some portions of the site could be necessary. The project would have no effect on the supply or quality of ground water. During demolition of the existing building and excavation, some siltation of storm drains would occur through spillage from truck loads and air transport of dust. However, this would not be substantial. Siltation during construction would be controlled by means such as tarpaulin-covering truck loads and containment of exposed earth surfaces. Erosion would not occur because the site is already paved and is virtually flat. No further study is required in the EIR.

11. Energy/Natural Resources	YES	NO	DISCUSSED
*a. Encourage activities which result in the use of large amounts of fuel, water, or energy, or use these in a wasteful manner?	X		X
b. Have a substantial effect on the potential use, extraction, or depletion of a natural resource?		X	X

The project would be designed to comply with the energy consumption and conservation requirements of Title 24 of the California Administrative Code and all state and local building energy conservation codes. Therefore, it is not likely to encourage wasteful use of energy. The amount of energy that would be used will be addressed in the EIR. Land uses proposed for the site would not have a substantial impact on the extraction or depletion of natural resources.

During construction, about 20×10^{10} Btu of energy would be consumed by equipment and machinery.[13] This does not include the energy embodied in the building materials themselves. However, this energy consumption would be of a reasonable amount for the type of construction proposed and would not constitute a wasteful use of energy. Construction energy consumption does not require further analysis in the EIR.

12. Hazards	YES	NO	DISCUSSED
*a. Create a potential public health hazard or involve the use, production or disposal of materials which pose a hazard to people or animal or plant populations in the area affected?		X	X
*b. Interfere with emergency response plans or emergency evacuation plans?		X	X

	YES	NO	DISCUSSED
c. Create a potentially substantial fire hazard?	___	X	X

No PCB's would be used in electrical transformers in the building because PG&E has phased-out such coolants. There would be no hazardous wastes generated by the proposed uses.

An emergency response plan would be developed as part of the proposed project. This plan would be coordinated with the City's emergency response plan.

The project is not likely to create a substantial fire hazard as buildings would conform to the life safety provisions of the San Francisco Building Code. Residential units would have smoke detectors, and fire alarm systems would be installed in all buildings. If required, sprinkler systems would be installed.

Since the proposed residential towers would be classified as high rises by the Fire Department (over 75 feet in height), a fire safety director trained in building evacuation and safety would be required. Fire protection training is provided by the Bureau of Fire Prevention.

13. Cultural	YES	NO	DISCUSSED
*a. Disrupt or adversely affect a prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group; or a paleontological site except as a part of a scientific study?	X	___	X
*b. Conflict with established recreational, educational, religious or scientific uses of the area?	___	X	___
c. Conflict with preservation of any buildings of City landmark quality?	___	X	X

In 1969, the skeletal remains of a prehistoric Indian woman was found 75 feet below the surface near the intersection of Market and Fulton Street.[14] The find was made during excavation of the Civic Center BART station, and was removed for scientific analysis, which indicated that the skeleton is about 4900 years old. These are the oldest human remains ever found in the Bay

Area. The find revealed no information regarding the culture, society or economy of the time. The depth of the find suggests that thousands of years of ground shifting, soils deposition and siltation have occurred in the site area. While it is possible that other remains exist, the depth of excavation at the site would not be expected to uncover similar prehistoric remains.

The archaeological mitigation agreed to by the sponsor would mitigate any potential effects on any subsurface archaeological remains.

The proposed project is adjacent to the Civic Center Historic District. No buildings listed in the 1976 Department of City Planning Survey of Architecturally Significant Buildings, the Heritage Survey Rating, or the "San Francisco Downtown Architectural Survey: C-3 Zoning District (December, 1982)" would be affected by the project. No further analysis is required in the EIR.

Shadow impacts and urban design issues related to nearby historic buildings will be addressed in the EIR.

C. OTHER	YES	NO	DISCUSSED
Require approval of permits from City Departments other than DCP or BBI, or from Regional, State or Federal Agencies?	___	X	___

D. MITIGATION MEASURES	YES	NO	N/A	DISCUSSED
1. If any significant effects have been identified, are there ways to mitigate them?	X	___	___	X
2. Are all mitigation measures identified above included in the project?	___	X	___	X

Mitigation Measures Included as Part of the Project

1. As recommended in the Environmental Protection Element of the Comprehensive Plan, the project sponsor agrees to undertake a detailed analysis of noise reduction requirements and to include noise insulation features in the design. The residential towers would have to comply with Title 25, Noise Insulation Standards, which requires interior noise levels not to exceed 45 dBA between 10 PM and 7 PM and 55 dBA between 7 AM and 10 PM.

2. The sponsor would specify in the construction contract that the contractor must muffle equipment so that noise would not exceed limits set by the City Noise Ordinance (Article 29, San Francisco Administrative Code, 1972).

3. The sponsor proposes to relocate all residents currently living in the apartments on the site. These residents would be offered apartments in the City owned by the sponsor at rents comparable to those now paid.

4. The project would include 960 residential units to offset the 716 housing units required by the City's OHPP policy for office construction.

5. The sponsor would require the construction contractor, by contract, to water the site when needed to reduce dust blown up during site preparation.

6. A site-specific soils investigation will be undertaken by a California-licensed soils engineer prior to construction of the project. Soils samples will be analyzed to determine the appropriate structural design for the proposed buildings. The sponsor agrees to reduce any geologic hazards by following the recommendations of the soils engineers.

7. Siltation due to construction could be controlled by covering earth removal trucks with tarps.

8. An evacuation and emergency response plan would be developed by the sponsor or building management staff, in consultation with the Mayor's Office of Emergency Services, to insure coordination between the City's emergency planning activities and the project's plan and to provide for building occupants in the event of an emergency. The project plan would be reviewed by the Office of Emergency Services and implemented by building management insofar as feasible before issuance by the Department of Public Works of final building permits.

9. Should evidence of cultural or historic artifacts of significance be found during project excavation, the Environmental Review Officer and the President of the Landmarks Preservation Advisory Board would be notified. The project sponsor would select an archaeologist or other expert to help the Office of Environmental Review determine the significance of the find and whether feasible measures, including appropriate security measures, could be implemented to preserve or recover such artifacts. The Environmental Review Officer would then recommend specific mitigation measures, if necessary, and recommendations would be sent to the State

Office of Historic Preservation. Excavation or construction which might damage the discovered cultural resources would be suspended for a maximum of four weeks to permit inspection, recommendation and retrieval, if appropriate.

Mitigation Measures Under Consideration by the Sponsor

1. If found to be feasible through a soils investigation of the site and if recommended by a structural engineer, the sponsor would consider using a mat-type foundation or other foundation type not requiring noisy pile driving operations.

Alternatives to be Discussed in the EIR

Although the project would include more housing units than the amount required by the City's OHPP policy, there would be a loss of existing residences that would not be offset by the project. In order to eliminate this impact, the sponsor is considering construction of an additional 500 units of housing in phase two. This would reduce phase two office construction by about 400,000 gsf, and would thereby reduce office-related housing demand to about 373 units. This alternative to provide a total of 1460 units would not only satisfy the housing demand due to the project, but would generate a surplus of 729 units. This measure will be considered as an alternative to the project in the EIR.

E. MANDATORY FINDINGS OF SIGNIFICANCE	YES	NO	DISCUSSED
*1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or pre-history?		X	
*2. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?		X	
*3. Does the project have possible environmental effects which are individually limited, but cumulatively considerable? (Analyze in the light of past projects, other current projects, and probable future projects.)	X		X
*4. Would the project cause substantial adverse effects on human beings, either directly or indirectly?		X	
*5. Is there a serious public controversy concerning the possible environmental effect of the project?		X	

The cumulative impacts of the project, including transportation and air quality, will be addressed in the EIR. At this time, there is no known public controversy regarding the project.

Footnotes

1. San Francisco Department of City Planning, Environmental Protection Element, The Comprehensive Plan, pp. 15-19. The Plan for Transportation Noise Control section of this element was adopted by City Planning Commission Resolution 7244, September 19, 1974. L_{dn} is defined as an averaged sound level measurement, based on human reaction to cumulative noise exposure over a 24-hour period, which takes into account the greater annoyance of nighttime noises. Noise between 10 P.M. and 7 A.M. is weighted 10 dBA higher than daytime noise.
2. Assumes an average occupancy rate of 1.05 persons per unit. With an average size of 450 net square feet, the apartments would, in most cases, be occupied by only one person.
3. Daytime worker population is based on the following estimates: 500,000 g.s.f. of residential space plus 10,000 g.s.f. of retail space equals 510,000 g.s.f. divided by one maintenance staff per 12,000 g.s.f. (510,000/12,000 = 42.5, call it 43 maintenance jobs).
   Retail employment assumes one person per 350 g.s.f.
   Phase one: 10,000/350 = 28.5, call it 29.
   Phase two: 40,000/350 = 114.
   Total phase one and two: 143 retail workers
   Office employment assumes one person per 250 g.s.f.
   Phase two: 820,000/250 = 3280 office workers.
4. California Solid Waste Management Board, Solid Waste Generation Factors in California, July 1974, and War on Waste Progress Report, Annual Report, 1981. Assumes one person per dwelling unit.
5. Edward J. Phipps, Assistant Chief, Support Services, San Francisco Fire Department, telephone conversation, September 29, 1983.
6. Sergeant James Farrell, Crime Analysis Section, San Francisco Police Department, telephone conversation, September 29, 1983.
7. Ken Austin, Commercial and Industrial Marketing Supervisor, Pacific Gas & Electric Company, telephone conversation, September 29, 1983.
8. Water demand estimates are derived from Rincon Point-South Beach EIR, Appendix B, p. 212, and San Francisco Water Department, Annual Report, FY 1978-1979, p. 11.
9. George Nakagaki, Manager, City Distribution Division, San Francisco Water Department, letter dated October 6, 1983.
10. Mervin Francies, Engineering Associate II, Clean Water Program - Engineering, telephone conversation, September 29, 1983.
11. Eugene Aughtry, Building Industry Consultant, Pacific Telephone, letter dated October 6, 1983, and telephone conversation of October 18, 1983.
12. PSC Associates, Inc., Soil Engineering Investigation, Proposed Building at 1155 Market Street, February 27, 1981.

13. Stern, R.G., Handbook of Energy Use for Building Construction, March 1981, U.S. Department of Energy (DOE/CE/20220-1), p. 43.
14. Winfield Hern, Chief Survey Archaeologist, and Robert Schenk, Curator, San Francisco State College, "An Archaeological Analysis of Skeletal Material Excavated from the Civic Center Station of BART," June 1970.

F. ON THE BASIS OF THIS INITIAL STUDY:

_____ I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared by the Department of City Planning.

_____ I find that although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because the mitigation measures, numbers _____ , in the discussion have been included as part of the proposed project. A NEGATIVE DECLARATION will be prepared.

✓ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Alec S. Bash
Environmental Review Officer

for

Dean L. Macris
Director of Planning

ate: 10/17/83

TABLE B-1: PASSENGER LEVELS OF SERVICE ON BUS TRANSIT

Level of Service	Description	Passengers per Seat
A	Level of Service A describes a condition of excellent passenger comfort. Passenger loadings are low with less than half the seats filled. There is little or no restriction on passenger maneuverability. Passenger loading times do not affect scheduled operation.	0.00-0.50
B	Level of Service B is in the range of passenger comfort with moderate passenger loadings. Passengers still have reasonable freedom of movement on the transit vehicle. Passenger loading times do not affect scheduled operations.	0.51-0.75
C	Level of Service C is still in the zone of passenger comfort, but loadings approach seated capacity and passenger maneuverability on the transit vehicle is beginning to be restricted. Relatively satisfactory operating schedules are still obtained as passenger loading times are not excessive.	0.76-1.00
D	Level of Service D approaches uncomfortable passenger conditions with tolerable numbers of standees. Passengers have restricted freedom to move about on the transit vehicle. Conditions can be tolerated for short periods of time. Passenger loadings begin to affect schedule adherence as the restricted freedom of movement for passengers requires longer loading times.	1.01-1.25
E	Level of Service E passenger loadings approach manufacturers' recommended maximums and passenger comfort is at low levels. Freedom to move about is substantially diminished. Passenger loading times increase as mobility of passengers on the transit vehicle decreases. Scheduled operation is difficult to maintain at this level. Bunching of buses tends to occur which can rapidly cause operations to deteriorate.	1.26-1.50
F	Level of Service F describes crush loadings. Passenger comfort and maneuverability is extremely poor. Crush loadings lead to deterioration of scheduled operations through substantially increased loading times.	1.51 1.60

SOURCE: Environmental Science Associates, Inc. from information in the Interim Materials on Highway Capacity, Transportation Research Circular 212, pp. 73-113, Transportation Research Board, 1980.

PEDESTRIAN ANALYSIS

The pedestrian analysis has been conducted following methods developed by Pushkarev and Zupan in Urban Space for Pedestrians (MIT Press, 1975). Table B-2 shows the relationship between pedestrian flow rates and the flow regimes (categories) used to describe levels of operation. Figure B-2 shows photographs of pedestrian conditions that correspond to the flow regimes.

TABLE B-2: PEDESTRIAN FLOW REGIMEN

FLOW REGIME/a/	CHOICE	CONFLICTS	FLOW RATE (p/f/m)/b/
Open	Free Selection	None	less than 0.5
Unimpeded	Some Selection	Minor	0.5 to 2.0
Impeded	Some Selection	High Indirect Interaction	2.1 to 6.0
Constrained	Some Restriction	Multiple	6.1 to 10.0
Crowded	Restricted	High Probability	10.1 to 14.0
Design Limit - Upper Limit of Desirable Flow			
Congested	All Reduced	Frequent	14.1 to 18.0
Jammed	Shuffle Only	Unavoidable	Not applicable/c/

/a/ Photographs of these conditions are shown in Figure B-2.
/b/ P/F/M = Pedestrians per foot of effective sidewalk width per minute.
/c/ For Jammed Flow, the (attempted) flow rate degrades to zero at complete breakdown.

SOURCE: Urban Space for Pedestrians, MIT Press, 1975, Cambridge, MA.

The borderline between IMPEDED and UNIMPEDED FLOW, with about 130 sq ft (12 m^2) per person, or a flow rate of about 2 people per min per ft (6.5 per m) of walkway width. Individuals as well as couples visible in this view have a choice of speed and direction of movement. This rate of flow is recommended for design of outdoor walkways in office districts and other less dense parts of downtown areas.

The uneven nature of UNIMPEDED FLOW. While the people walking in the plaza which is 17 ft (5.2 m) wide, compared to 23 ft (7 m) in the preceding picture have almost 130 sq ft (12 m^2) per person on the average, the space allocation for the eight individuals in the foreground is closer to 70 sq ft (6.4 m^2). Thus, indirect interaction with others is still quite frequent in the upper range of UNIMPEDED FLOW.

The midpoint of the IMPEDED FLOW range, with about 75 sq ft (6.9 m^2) per person, or a flow rate of about 4 people per min per ft (13 per m) of walkway width. Physical conflicts are absent, but pedestrian navigation does require constant indirect interaction with others. This rate of flow is recommended as an upper limit for the design of outdoor walkways in shopping districts and other dense parts of downtown areas.

Lower range of UNIMPEDED movement, approaching OPEN FLOW. About 350 sq ft (32.2 m^2) per person, or a flow rate of less than 1 person per min per ft (3.3 per m) of walkway width. Complete freedom to select the speed and direction of movement; individuals behave quite independently of each other. For a design standard based solely on pedestrian density, this amount of space can be considered excessive.

FIGURE B-2
PHOTOS OF PEDESTRIAN FLOW LEVELS

SOURCE: PUSHKAREV AND ZUPAN

JAMMED FLOW. Space per pedestrian in this view is about 3.8 sq ft (0.35 m^2). This is representative of the lower half of the speed-flow curve, where only shuffling movement is possible and even the extremely uncomfortable maximum flow rate of 25 people per min per ft (82 per m) of walkway width cannot be attained due to lack of space. Photograph by Louis B. Schlivek.

The threshold of CONGESTED FLOW. The first eleven people in the view have about 16 sq ft (1.5 m^2) per person, corresponding to a flow rate of about 15 people per min per ft (49 per m) of walkway width. The beginnings of congestion are evident in bodily conflicts affecting at least three of the walkers, and in blocked opportunities for walking at a normal pace.

The onset of CROWDED FLOW, with an average of about 24 sq ft (2.2 m^2) per person, or a flow rate of about 10 people per min per ft (33 per m) of walkway width. Choice of speed is partially restricted, the probability of conflicts is fairly high, passing is difficult. Voluntary groups of two, of which two can be seen in the picture, are maintained, but cause interference. Note also some overflow into the vehicular roadway in the background.

The midpoint of the CONSTRAINED FLOW range, with about 30 sq ft (2.8 m^2) per person, or a flow rate of about 8 people per min per ft (26 per m) of walkway width. The choice of speed is occasionally restricted, crossing and passing movements are possible, but with interference and with the likelihood of conflicts. The man in the dark suit seems to be able to cross in front of the two women in the foreground quite freely, but in the background near the curb people are having difficulty with passing maneuvers.

FIGURE B-2 (CONTINUED):
PHOTOS OF PEDESTRIAN FLOW LEVELS

SOURCE: PUSHKAREV AND ZUPAN

INTERSECTION ANALYSIS

The capacity analysis of each intersection at which a turning movement count was made utilized the "critical lane" method. This method of capacity calculation is a summation of maximum conflicting approach lane volumes that gives the capacity of an intersection in vehicles per hour per lane. (This method is explained in detail in an article entitled "Intersection Capacity Measurement Through Critical Movement Summations: A Planning Tool," by Henry B. McInerney and Stephen G. Peterson, January 1971, Traffic Engineering. This method is also explained in "Interim Materials on Highway Capacity", Transportation Research Circular No. 212, Transportation Research Board, January 1980). The maximum service volume for Level of Service E was assumed as intersection capacity. A service volume is the maximum number of vehicles that can pass an intersection during a specified time period in which operating conditions are maintained corresponding to the selected and specified Level of Service (see Table B-3). For each intersection analyzed, the existing peak-hour volume was computed and a volume-to-capacity (v/c) ratio was calculated by dividing the existing volume by the capacity at Level of Service E.

TABLE B-3: VEHICULAR LEVELS OF SERVICE AT SIGNALIZED INTERSECTIONS

Level of Service	Description	Volume/Capacity (v/c) Ratio/a/
A	Level of Service A describes a condition where the approach to an intersection appears quite open and turning movements are made easily. Little or no delay is experienced. No vehicles wait longer than one red traffic signal indication. The traffic operation can generally be described as excellent.	less than 0.60
B	Level of Service B describes a condition where the approach to an intersection is occasionally fully utilized and some delays may be encountered. Many drivers begin to feel somewhat restricted within groups of vehicles. The traffic operation can generally be described as very good.	0.61-0.70
C	Level of Service C describes a condition where the approach to an intersection is often fully utilized and back-ups may occur behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so. The driver occasionally may have to wait more than one red traffic signal indication. The traffic operation can generally be described as good.	0.71-0.80
D	Level of Service D describes a condition of increasing restriction causing substantial delays and queues of vehicles on approaches to the intersection during short times within the peak period. However, there are enough signal cycles with lower demand such that queues are periodically cleared, thus preventing excessive back-ups. The traffic operation can generally be described as fair.	0.81-0.90
E	Capacity occurs at Level of Service E. It represents the most vehicles that any particular intersection can accommodate. At capacity there may be long queues of vehicles waiting up-stream of the intersection and vehicles may be delayed up to several signal cycles. The traffic operation can generally be described as poor.	0.91-1.00
F	Level of Service F represents a jammed condition. Back-ups from locations downstream or on the cross street may restrict or prevent movement of vehicles out of the approach under consideration. Hence, volumes of vehicles passing through the intersection vary from signal cycle to signal cycle. Because of the jammed condition, this volume would be less than capacity.	1.01+

/a/ Capacity is defined as Level of Service E.

SOURCE: San Francisco Department of Public Works, Traffic Division, Bureau of Engineering from Highway Capacity Manual, Highway Research Board, 1965

TABLE B-4: TRAFFIC LEVELS OF SERVICE FOR FREEWAYS

Level of Service	Description	Volume/Capacity (v/c) Ratio/a/
A	Level of Service A describes a condition of free flow, with low volumes and high speeds. Traffic density is low, with speeds controlled by driver desires, speed limits, and physical roadway conditions. There is little or no restriction in maneuverability due to the presence of other vehicles, and drivers can maintain their desired speeds with little or no delay.	0.00-0.60
B	Level of Service B is in the higher speed range of stable flow, with operating speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed and lane of operation. Reductions in speed are not unreasonable, with a low probability of traffic flow being restricted.	0.61-0.70
C	Level of Service C is still in the zone of stable flow, but speeds and maneuverability are more closely controlled by the highervolumes. Most of the drivers are restricted in their freedom to select their own speed, change lanes, or pass. A relatively satisfactory operating speed is still obtained.	0.71-0.80
D	Level of Service D approaches unstable flow, with tolerable operating speeds being maintained though considerably affected by changes in operating conditions. Fluctuations in volume and temporary restrictions to flow may cause substantial drops in operating speeds. Drivers have little freedom to maneuver, and comfort and convenience are low, but conditions can be tolerated for short periods of time.	0.81-0.90
E	Level of Service E cannot be described by speed alone, but represents operations at even lower operating speeds (typically about 30 to 35 mph) than in Level D, with volumes at or near the capacity of the highway. Flow is unstable, and there may be stoppages of momentary duration.	0.91-1.00
F	Level of Service F describes forced flow operation at low speeds (less than 30 mph), in which the freeway acts as storage for queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially and stoppages may occur for short or long periods of time because of downstream congestion. In the extreme, both speed and volume can drop to zero.	1.00+

/a/ Capacity is defined as Level of Service E.

SOURCE: Environmental Science Associates, Inc. from information in the Highway Capacity Manual, Special Report 87, Highway Research Board, 1965.

APPENDIX C: SAN FRANCISCO AIR POLLUTANT SUMMARY, 1981-1984

STATION: 900 23rd Street, San Francisco

POLLUTANT:		STANDARD	1981	1982	1983	1984/i/
OZONE (O^3) (Oxidant)						
1-hour concentration, ppm/a/						
Highest hourly average	0.10 /b/	0.12 /c/	0.07	0.08	0.13	0.10
Number of excesses of state standard			0	0	1	1
Expected Annual Excess (federal)/d/			0.0	0.0	0.3	-
CARBON MONOXIDE (CO)						
1-hour concentration, ppm						
Highest hourly average		20 /b,e/	8	12	7	-
Number of excesses of standard			0	0	0	-
8-hour concentration, ppm						
Highest 8-hour average		9 /b,c/	5.3	9.1	5.1	10.8
Number of excesses of standard			0	1	0	1
TOTAL SUSPENDED PARTICULATE (TSP)						
24-hour concentration, ug/m^3/a/						
Highest 24-hour average		100 /b,f/	103	126	117	-
Number of excesses of standard/g/			1	3	4	-
Annual concentration, ug/m^3						
Annual Geometric Mean		60 /b,f/	56	57	55	60
Annual excess of standard			No	No	No	Yes
LEAD (Pb)						
30-day concentration, ug/m^3						
Highest 30-day average		1.5 /b/	0.6	0.7	0.4	-
Number of excesses of standard			0	0	0	-
NITROGEN DIOXIDE (NO_2)						
1-hour concentration, ppm						
Highest hourly average		0.25 /b/	0.11	0.13	0.13	0.14
Number of excesses of standard			0	0	0	0
SULFUR DIOXIDE (SO_2)						
24-hour concentration, ppm						
Highest 24-hour average		0.05 /b/	0.016	0.012	0.018	0.03
Number of excesses of standard/g,h/			0	0	0	0

/a/ ppm: parts per million. ug/m^3: micrograms per cubic meter.
/b/ State standard, not to be equaled or exceeded, except for CO standards, which are not to be exceeded.

(Continued)

/c/ Federal standard, not to be exceeded more than once per year, except for annual standards, which are not to be exceeded.
/d/ Expected Annual Excess is a three-year average of annual excesses of the federal standard.
/e/ The state one-hour CO standard was revised from 35 ppm to 20 ppm in January 1983. The federal one-hour standard remains 35 ppm.
/f/ The California ARB has redefined the state particulate standard to apply to "inhalable" particulates only (i.e., those which have a diameter less than ten microns). The new standards are 50 ug/m^3 for 24-hour averages and 30 ug/m^3 for the annual geometric mean. No data is currently available on the particle size distribution of the TSP sampled at the San Francisco monitoring station.
/g/ Number of observed excess days (measurements taken once every six days).
/h/ Exceeding the SO_2 standard is a violation only if a concurrent excess of the state ozone or TSP standards occurs at the same station. Otherwise, the federal standard of 0.14 ppm applies.
/i/ 1981-1984 data collected at 900 23rd Street

SOURCE: BAAQMD, 1981 - 1983, Air Quality in the San Francisco Bay Area; and California ARB, 1981 - 1984, California Air Quality Data.

APPENDIX D

FUNDAMENTAL CONCEPTS OF ENVIRONMENTAL NOISE

This section provides background information to aid in understanding the technical aspects of this report.

Three dimensions of environmental noise are important in determining subjective response. These are:

a. the intensity or level of the sound

b. the frequency spectrum of the sound

c. the time-varying character of the sound

Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB), with 0 dB corresponding roughly to the threshold of hearing.

The "frequency" of a sound refers to the number of complete pressure fluctuations per second in the sound. The unit of measurement is the cycle per second (cps) or Hertz (Hz). Most of the sounds which we hear in the environment do not consist of a single frequency, but of a broad band of frequencies, differing in level. The quantitative expression of the frequency and level content of a sound is its sound spectrum. A sound spectrum for engineering purposes is typically described in terms of octave bands which separate the audible frequency range (for human beings, from about 20 to 20,000 Hz) into ten segments.

Many rating methods have been devised to permit comparisons of sounds having quite different spectra. Fortunately, the simplest method correlates with human response practically as well as the more complex methods. This method consists of evaluating all of the frequencies of a sound in accordance with a weighting that progressively and severely deemphasizes the importance of frequency components below 1000 Hz, with mild deemphasis above 5000 Hz. This type of frequency weighting reflects the fact that human hearing is less sensitive at low frequencies and extreme high frequencies than in the frequency midrange.

The weighting curve described above is called "A" weighting, and the level so measured is called the "A-weighted sound level," or simply "A-level."

The A-level in decibels is expressed "dBA"; the appended letter "A" is a reminder of the particular kind of weighting used for the measurement. In practice, the A-level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. All U.S. and international standard sound level meters include such a filter. Typical A-levels measured in the environment and in industry are shown in Figure 1.

Although the A-level may adequately describe environmental noise at any instant in time, the fact is that the community noise level varies continuously. Most environmental noise includes a conglomeration of distant noise souces which create a relatively steady background noise in which no particular source is identifiable. These distant sources may

include traffic, wind in trees, industrial activities, etc. These noise sources are relatively constant from moment to moment, but vary slowly from hour to hour as natural forces change or as human activity follows its daily cycle. Superimposed on this slowly varying background is a succession of identifiable noisy events of brief duration. These may include nearby activities or single vehicle passages, aircraft flyovers, etc., which cause the environmental noise level to vary from instant to instant.

To describe the time-varying character of environmental noise, the statistical noise descriptors L10, L50, and L90 are commonly used. The L10 is the A-weighted sound level equaled or exceeded during 10 percent of a stated time period. The L10 is considered a good measure of the "average peak" noise. The L50 is the A-weighted sound level that is equaled or exceeded 50 percent of a stated time period. The L50 represents the median sound level. The L90 is the A-weighted sound level equaled or exceeded during 90 percent of a stated time period. The L90 is used to describe the background noise.

As it is often cumbersome to describe the noise environment with these statistical descriptors, a single number descriptor called the Leq is also widely used. The Leq is defined as the equivalent steady-state sound level which in a stated period of time would contain the same acoustic energy as the time-varying sound level during the same time period. The Leq is particularly useful in describing the subjective change in an environment where the source of noise remains the same but there is change in the level of activity. Widening roads and/or increasing traffic are examples of this kind of situation.

In determining the daily measure of environmental noise, it is important to account for the difference in response of people to daytime and nighttime noises. During the nighttime, exterior background noises are generally lower than the daytime levels. However, most household noise also decreases at night and exterior noises become very noticeable. Further, most people are sleeping at night and are very sensitve to noise intrusion.

To account for human sensitivity to nighttime noise levels a descriptor, Ldn, (day-night equivalent sound level) was developed. The Ldn divides the 24-hour day into the daytime of 7 a.m. to 10 p.m. and the nighttime of 10 p.m. to 7 a.m. The nighttime noise level is weighted 10 dB higher than the daytime noise level. The Ldn, then, is the A-weighted average sound level in decibels during a 24-hour period with 10 dBA added to the hourly Leqs during the nighttime. For highway noise environments the Leq during the peak traffic hour is approximately equal to the Ldn.

The effects of noise on people can be listed in three general categories:

1. subjective effects of annoyance, nuisance, dissatisfaction
2. interference with activities such as speech, sleep, learning
3. physiological effects such as startle, hearing loss

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Unfortunately, there is as yet no completely satisfactory measure of the subject effects of noise, or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance, and habituation to noise over differing individual past experiences with noise.

Thus, an important parameter in determining a person's subjective reaction to a new noise is the existing noise environment to which one has adapted: the so-called "ambient" noise. "Ambient" is defined as "the all-encompassing noise associated with a given environment, being a composite of sounds from many sources, near and far." In general, the more a new noise exceeds the previously existing ambient, the less acceptable the new noise will be judged by the hearers.

With regard to increases in noise level, knowledge of the following relationships will be helpful in understanding the quantitative sections of this report:

1. Except in carefully controlled laboratory experiments, a change of only 1 dBA cannot be perceived.

2. Outside of the laboratory, a 3-dBA change is considered a just-noticeable difference.

3. A change in level of at least 5 dBA is required before any noticeable change in community response would be expected.

4. A 10-dBA change is subjectively heard as approximately a doubling in loudness, and would almost certainly cause an adverse change in community response.

Source: Charles M. Salter Associate, Inc., November, 1982

A-WEIGHTED SOUND PRESSURE LEVEL, IN DECIBELS

	140	
	130	THRESHOLD OF PAIN
CIVIL DEFENSE SIREN [100']		
	120	
JET TAKEOFF [200']		
	110	ROCK MUSIC BAND
RIVETING MACHINE		
	100	PILE DRIVER [50']
DIESEL BUS [15']		AMBULANCE SIREN [100']
	90	BOILER ROOM PRINTING PRESS PLANT
BAY AREA RAPID TRANSIT TRAIN PASSBY [10']		
	80	GARBAGE DISPOSAL IN HOME [3']
PNEUMATIC DRILL [50'] SF MUNI LIGHT RAIL VEHICLE [35']		INSIDE SPORTS CAR [50 MPH]
	70	
FREIGHT CARS [100']		
VACUUM CLEANER [10']	60	DATA PROCESSING CENTER
SPEECH [1']		DEPARTMENT STORE
AUTO TRAFFIC NEAR FREEWAY	50	PRIVATE BUSINESS OFFICE LIGHT TRAFFIC [100']
LARGE TRANSFORMER [200']	40	TYPICAL MINIMUM NIGHTTIME LEVELS-RESIDENTIAL AREAS
AVERAGE RESIDENCE		
	30	
SOFT WHISPER [5']		
	20	
RUSTLING LEAVES		RECORDING STUDIO
	10	
THRESHOLD OF HEARING		MOSQUITO [3']
	0	

[100']-DISTANCE IN FEET BETWEEN SOURCE AND LISTENER

TYPICAL SOUND LEVELS MEASURED IN THE ENVIRONMENT AND INDUSTRY

APPENDIX E
WIND IMPACT ANALYSIS
TRINITY PLAZA PROJECT

I INTRODUCTION

Tests were performed on a 1 inch = 40 feet scale model of the project site and surrounding several blocks. All proposed, approved and under-construction buildings within the area modeled were included.

Tests were conducted in University of California Department of Architecture boundary layer wind tunnel in Berkeley. The tunnel has a cross-section seven-feet wide by five-feet high, and has a total length of 45 feet.

Visualization of the flow was performed by releasing flood-lit smoke near the model. Wind speeds were measured at 27 locations near the project site for existing conditions and with the project and two alternative designs in place. Measurements were made with a hot-wire probe and a constant-temperature anemometer, an instrument that electronically relates heat loss from the probe to wind speed. Mean windspeeds and the turbulence intensity measured over the model were related statistically to real-world winds by comparing measured winds to the free-stream wind above the model.

II METHODOLOGY AND CRITERIA

The wind ordinance associated with the Downtown Plan (Section 148) is defined in terms of "equivalent wind speed". The term denotes wind speed averaged over one hour (mean velocity), adjusted to include the level of gustiness and turbulence.

The mean wind velocities at street level were determined by a wind tunnel test and a comparison of the test results with statistically representative records of wind data collected atop the Old Federal Building.

The Downtown Plan sets comfort levels of 11 mph equivalent wind speed for areas of substantial pedestrian use and 7 mph for public seating areas. New buildings and additions to buildings may not cause ground level winds that would exceed these levels more than 10% of the time year round between 7:00 a.m. and 6:00 p.m. If a project causes wind to

exceed the comfort level, new buildings and additions shall be designed to reduce ambient wind speed to meet the requirements, except when it is shown that the building or addition cannot be shaped or wind baffling measures cannot be adapted to meet these requirements without creating an unattractive building form and without unduly restricting development of the site. No building or addition that would cause wind speeds to exceed the 26 mph hazard level for a single hour of any year is permitted.

III ANALYSIS

The results of the wind tunnel analysis are presented in tabular form in Figure E-1. The values presented are the estimated wind speeds that would be exceeded 10% of the time between the hours of 7:00 a.m. and 6:00 p.m. on an annual basis.

Wind tunnel tests were conducted for wind on the project site in its current condition and with the proposed project in relation to the Downtown Plan wind performance criteria (adopted by the City Planning Commission on November 29, 1984).

Wind tunnel measurements were used to predict equivalent mean wind speed[1] near the proposed project site for the proposed project and Alternatives Two and Four. These mean wind speeds were compared to comfort criteria, based on the onset of uncomfortable physical effects of the wind, of 11 mph for pedestrian areas and 7 mph for sitting areas.

Existing wind speeds near the site were found to range from four to 15 mph, between 7:00 a.m. and 6:00 p.m. annually. The higher equivalent mean wind speeds were found at the Market Street/Eighth Street intersection and within the United Nations Plaza. Existing winds near the project site were found to exceed the 11 mph comfort criterion at four of the measurement locations. The hazard criterion (winds of 26 mph no more than one hour per year) is not currently exceeded near the site (see Figure E-1).

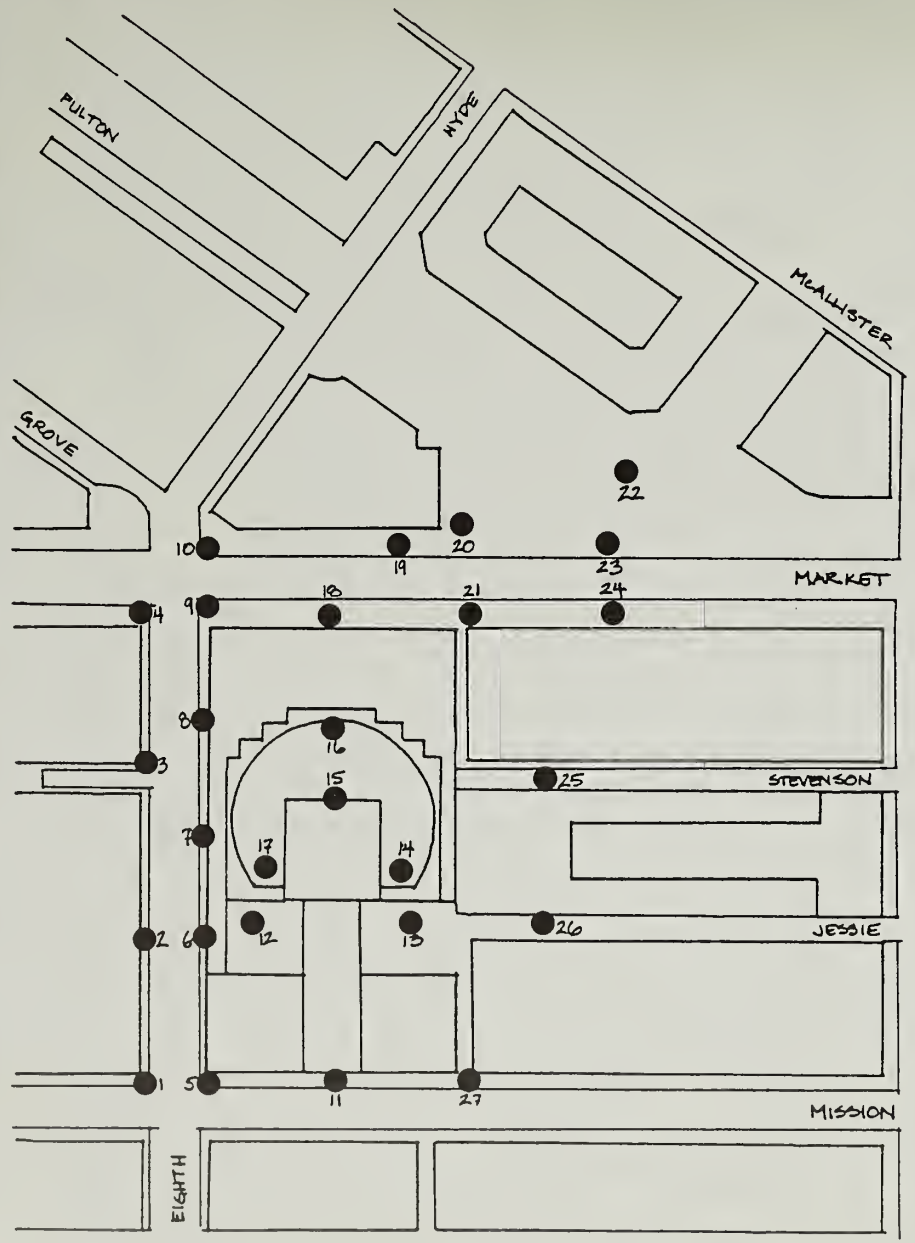
The project would generally decrease winds at ground level along Mission Street and near the Market/Eighth Street intersection while increasing winds along Eighth Street and within the United Nations Plaza. The maximum equivalent wind speed would be 14 mph on the southwest corner of the Market/Eighth Street intersection. Four locations outside the project would be above the 11 mph criterion. Within the plaza itself, the 7 sitting area criterion would be exceeded at one of 6 measurement locations. The hazard

TRINITY PLAZA
WIND MEASUREMENT LOCATIONS

FIGURE E-1

SOURCE: EIP ASSOCIATES;
DON BALLANTI, CERTIFIED METEROLOGIST

FEET 0 80 160 320



LOCATION	EXISTING	PROJECT	ALT 2 [2]	ALT 4 [3]
1	4	10	11	10
2	5	10	10	10
3	8	9	10	10
4	15 [1]	14	14	13
5	4	10	9	8
6	7	8	8	7
7	8	7	7	7
8	9	7	8	7
9	15	11	11	10
10	13	12	13	12
11	7	2	3	3
12	·	7	7	6
13	·	5	4	5
14	·	7	7	5
15	·	4	6	6
16	·	8	8	8
17	·	5	6	6
18	5	7	8	8
19	5	8	9	8
20	6	5	6	6
21	7	6	7	7
22	12	13	12	12
23	10	12	12	12
24	10	10	10	10
25	4	3	4	4
26	11	9	8	9
27	11	5	4	4

1 Underlined values are in excess of wind maximum for sitting (7mph) or walking (11mph) areas
Sites 12-17 are considered sitting areas

2 6 1 FAR Alternative

3 No Shadows on Public Open Space Alternative O

85017

criterion would not be exceeded at any location in the project vicinity as a result of project construction.

Both Alternatives Two and Four were found to have impacts similar to those of the proposed project.

IV MITIGATION

There are several ways of remassing the proposed project to reduce wind effects. The first would be to lower the Eighth and Market Street facades to reduce accelerations along those streets. Alternatively, the use of setbacks along these facades could help reduce winds. Different shapes or orientations for the residential towers could reduce wind speeds within the plaza itself, as could reducing the size of the plaza entrances. The main plaza entrance off Market Street may require the use of a glass wall with revolving doors to reduce winds within the plaza sufficiently to meet the sitting area criterion. Partial enclosure and/or modifications to the rooftop area surrounding the plaza may also reduce winds within the plaza. Whether such measures could bring down winds below the 11 mph criterion outside the building and 7 mph criterion within the plaza is not predictable without additional wind tunnel tests of design alternatives.

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[1] "Equivalent mean wind speed" is defined as an hourly windspeed adjusted to incorporate the effects of gustiness or turbulence on pedestrians.